TAD
The AI and Data Science Center
Tel Aviv University

TEL AVIV UNIVERSITY

TAD
The Center for AI and Data Science
Biennial Report
2023-2025

TAD

The Center for AI and Data Science

Biennial Report

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Letter from the Outgoing Head of TAD

It has been a profound privilege and honor to guide the Tel-Aviv University Center for Artificial Intelligence and Data Science (TAD) over the past four years, since its inauguration - a journey that actually began a few years earlier when the center was little more than an ambitious vision. From the very outset, we recognized that AI would profoundly transform science, society, and the challenges of our time. Yet, even our boldest expectations have been surpassed by the rapid, far-reaching impact of AI on academia and beyond. Working closely with the center's academic leadership, the scientific and administrative staff, and the many researchers across the university, TAD has established itself as a premier center for AI research and education in Israel.

Since our previous report two years ago, the global AI landscape has undergone a revolutionary transformation. The emergence of large foundational models, generative AI, and groundbreaking applications in fields such as biology and medicine—even garnering Nobel recognition—stand as testaments to the field's astounding progress. While much of this breakthrough has originated in industry, fueled by resources and agile processes beyond the reach of many academic institutions, it presents academia with significant challenges. We must now redefine our role: setting ambitious goals, addressing complex problems with the freedom of academic inquiry, and nurturing breakthroughs that inspire the next generation of AI researchers.

Indeed, these developments have profoundly influenced TAD's activities. The bi-annual progress report presented here highlights our recent achievements, research projects, events, and collaborations. Our strengthened presence on campus - through seminars, conferences, and collaborative meetings - now includes over a third of our faculty via TAD and its "Bridge" initiative. The AI revolution has underscored that this field is not isolated but a fundamental component of nearly every scientific discipline, prompting us to continuously refine our vision and strategies for the future of Tel-Aviv University, Israel, and the global community.

Our ongoing initiatives remain true to our founding mission: to support both fundamental and applied research, foster interdisciplinary collaborations, launch innovative undergraduate and graduate programs, build robust research infrastructure, and engage meaningfully with industry and public organizations. At the same time, recent experiences have highlighted areas for revisions. We are re-evaluating our graduate education program to better serve our goals and attract the brightest minds in Israel. Moreover, providing state-of-the-art computational infrastructure - a challenge faced not only by Tel-Aviv University but by academia worldwide - remains a challenge as we strive to keep pace with rapid advancements.

As of March 1, 2025, I have concluded my term as Head of the Center. I wish to express my gratitude to Tel-Aviv University President Prof. Ariel Porat for his unwavering support and visionary leadership, and to former President Prof. Yosef Klafter, for his early encouragement. I am delighted to hand over leadership to my successor, Prof. Yishay Mansour—a distinguished scientist and world leader in AI and machine learning, with whom I have had the pleasure of collaborating for over 30 years. I am confident that under his guidance, TAD will continue to flourish in the face of emerging challenges. I also extend my deepest thanks to my colleagues in the academic leadership, our dedicated team of professionals, data scientists, engineers, and the administrative staff led by Dr. Shimon Shahar, and to Dr. Shiri Stempler for promoting TAD.

Prof. Meir Feder

Letter from the New Head of TAD

It is a great honor to lead the Center for AI and Data Science (TAD) at Tel Aviv University. In its four years of existence, TAD has become instrumental in promoting AI research at TAU, establishing itself as a leading AI center in Israel.

To start, I want to express my sincere gratitude to Prof. Meir Feder for his visionary leadership in founding and guiding TAD from its inception. His foresight in recognizing the need for such a center at TAU was crucial, and his tireless advocacy has been essential to TAD success. Under his leadership, TAD has excelled in fostering both core AI research and interdisciplinary collaborations, connecting AI with a wide range of disciplines across the university.

Building on this strong foundation, TAD will continue to champion excellence in AI research, which has many facets. First and foremost, we will continue to advance core research in fundamental AI technologies. Second, given the wide variety of research disciplines at TAU, we will further promote interdisciplinary research, using AI as the glue that connects multiple disciplines across the TAU campus. Third, we will strengthen our efforts in enabling AI research through infrastructure support, educational initiatives, and serving as a bridge between AI and other disciplines, fostering collaboration and knowledge sharing. Furthermore, we will prioritize building strong partnerships with industry. Finally, we recognize the importance of ethical considerations in AI development and will actively promote research and discussion on responsible AI practices.

These are the key challenges and opportunities that TAD will address in the coming years.

I am confident that TAD will continue to thrive and lead TAU to new heights of achievement in AI research. I look forward to working with all of you to realize this vision.

Prof. Yishay Mansour

Mission

TAD Meet & Collaborate event, TAU Genia Schreiber Art Gallery. Photo: TAD

The Tel Aviv University Center for Artificial Intelligence and Data Science (TAD), which was inaugurated in March 2021, is an interdisciplinary center with a mission to advance innovative research and education in these fields. More than 320 faculty members, covering both core and application areas from across the campus (Exact Sciences, Engineering, Life Sciences, Medicine, Arts, Social Sciences, Law, Humanities, and Management, among others) are affiliated with the center. The center strives to transform all research areas, and puts a special focus on data science (DS) and AI for the benefit of humanity.

Our main goals are:

- **Support core research in AI and DS**
- **Promote interdisciplinary collaborative research across the campus**
- **Provide an infrastructure of computational resources and access to unique datasets**

- **Develop relations with industry and public organizations**
- **Promote education in AI and DS**

In pursuit of these aims, the center funds research in AI and DS and supports PhD candidates through excellence scholarship programs. The center also hosts workshops and meetings, and has established 13 communities in various fields. These are intended to connect and support its members and to foster collaborations inside the university and with other academic institutions, as well as with industry and government. A "Bridge" entity formed by the center is designed to help researchers through consulting, mentoring, and generating connections between research groups. The center is also involved in several TAU education programs for undergraduate and graduate students and also for youth.

Team

Academic Management

Prof. Yishay Mansour, Computer Science and AI, New Head of TAD

Prof. Meir Feder, Electrical and Computer Engineering, Outgoing Head of TAD

Prof. Saharon Rosset, Mathematical Sciences

Prof. Amir Globerson, Computer Science and AI

Prof. Irad Ben-Gal, Industrial and Intelligent Systems Engineering

Prof. Niva Elkin Koren, Law

Prof. Galit Yovel, Psychological Sciences

Prof. Tal Pupko, Shmunis Shcool of Biomedicine and Cancer Research

Prof. Nadav Cohen, Computer Science and AI

Extended Academic Management

Prof. Yoav Benjamini, Mathematical Sciences

Prof. Tova Milo, Computer Science and AI

Prof. Lior Wolf, Computer Science and AI

Prof. Isaac Ben Israel, Cyber

Prof. Hayit Greenspan, Biomedical Engineering

Prof. Oded Maimon, Industrial and Intelligent Systems Engineering

Prof. Manuel Trajtenberg, Economics

Research Staff

Dr. Moni Shahar, Scientific Manager

Dr. Shiri Stempler, Executive Director

Dr. Aya Vituri, Manager of The Statistical Consulting Lab

David Refaeli, Statistician, The Statistical Consulting Lab

Noam Yehezkel, Statistician, The Statistical Consulting Lab

Dr. Ruth Barshir, Director of Medical Data (Joint with Safra Center for Bioinformatics)

Giora Simchoni, Researcher

Dr. Vered Varod-Silber, Principal Consultant for Humanities and Social Sciences

Stav Klein, Head of Computational Text Analysis for Humanities and Social Sciences

Administrative Staff

Hilla Einy, Administrative Manager

Hana Schmilovich, Administrative Assistant

Omer Mizrahi, Event Coordination and Social Media

Miki Peled, Website Editor

TAD 4th Annual Meeting, TAU, 2025. Left to right (standing): Miki Peled, Omer Mizrahi, Stav Klein, Dr. Vered Varod-Silber, Hilla Einy, Prof. Niva Elkin-Koren, Prof. Meir Feder, Prof. Yishay Mansour, Prof. Tal Pupko, Dr. Shiri Stempler; (sitting): Prof. Saharon Rosset, Dr. Aya Vituri, Dr. Moni Shahar, David Refaeli, Noam Yehezkel. Photo: Chen Galili

Research

TAD is proud to have funded **77** research projects during the years 2023 - 2025, thereby providing financial support of more than **30** million NIS to **140** faculty members. These projects involve both core and interdisciplinary AI and DS research into a range of fields at TAU from Health and Sustainability, Computer Science, and Engineering, to Economics, Ethics, and Arts. The center promotes innovative research and supports individual as well as collaborative grants, through multiple programs. Many of the grants awarded support new collaborations between faculty members. We thank all the reviewers and members of grant committees of the different programs, headed by Prof. Saharon Rosset (Mathematical Sciences and TAD Management) and Dr. Shiri Stempler (TAD).

Grant Programs Awarded in Years 2023–2025

- Competitive Grant, Council of Higher Education 2021–2025
- High Impact Grants 2022–2025
- TAD Research Grants 2023–2025
- TAD and Google AI for Sustainability and Education 2023–2025
- Addressing AI Social Risks Grants 2023
- Collaborative Clinical Bioinformatics and AI Research Grants 2024
- Need Based Fund 2024
- TAD Research Grants 2025–2027
- TAD and Google AI for Societal Impact 2025–2026

Grant Programs

Distribution of Funding
Research Grants

Management

Arts

Humanities

Exact Sciences

Social Sciences

Law

Engineering

Medicine

Life Sciences
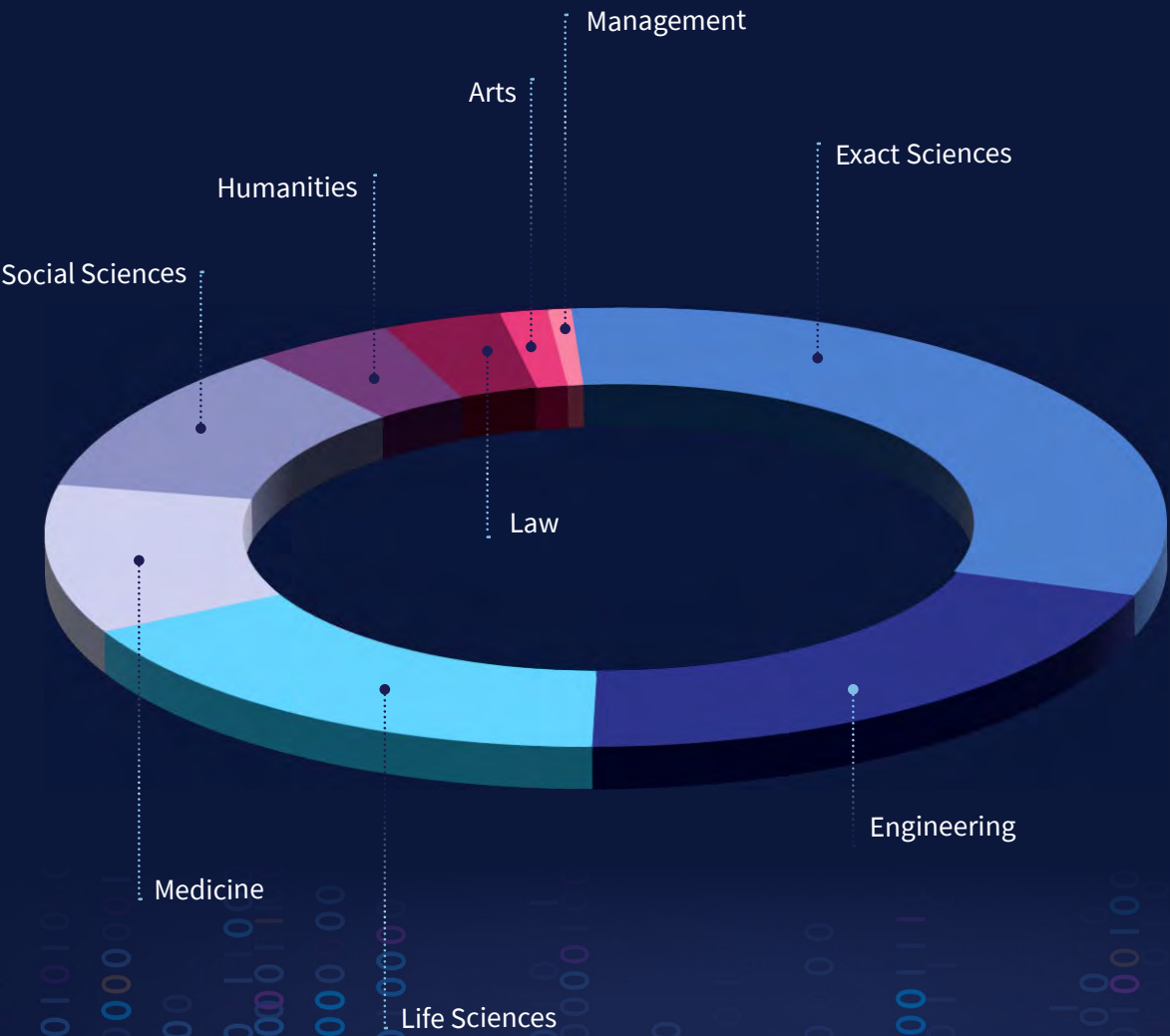
Competitive Grant — Council for Higher Education, 2021

In 2021, TAD center won the highest grant in the competitive program for data science centers in Israel, provided by the Council for Higher Education. This amounted to **20 million** NIS for **4** years (including matching from TAU).

The competitive grant builds on the strengths of the TAD center, and seeks to expand the impact of DS & AI across campus and outside the university. The proposal includes **5** collaborative projects involving **28** faculty members:

The Center for Theory of Deep Learning

Deep Learning Theory Retreat 2024, Botanica Hotel, Haifa. Left to right: Prof. Meir Feder, Prof. Raja Giryes, Prof. Tamir Hazan and Prof. Nadav Cohen. Photo: TAD

Much of the recent success of AI relies on deep learning techniques. However, these remain poorly understood from a theoretical perspective. In this project, we take advantage of an exceptionally strong and diverse group of TAU researchers with expertise in the field to tackle challenging questions and their practical implications. A key aspect of this project involves forming new cross-disciplinary collaborations that will be able to uncover original aspects of the core questions in this area. Each year of the 4-year grant TAD held a two-day retreat for the faculty members and the graduate students in the group.

Researchers: From Computer Science and AI: **Prof. Amir Globerson, Dr. Yair Carmon, Dr. Tomer Koren, Prof. Yishay Mansour, Dr. Nadav Cohen,** and **Prof. Lior Wolf.** From Engineering: **Prof. Meir Feder, Prof. Raja Giryes, Prof. Ran Gilad Bachrach** and **Dr. Roi Livni.** From Mathematical Sciences: **Prof. Saharon Rosset.**

Deep Neural Networks for Scientific Discovery

AI has the potential to revolutionize scientific research. Indeed, collaborations between data-scientists and researchers across the TAU campus have already resulted in unique AI-driven discoveries. The aim of this project is to devise a comprehensive methodology for using deep-learning within all aspects of scientific and engineering research (e.g., simulations, inverse models, and interpretability). The resulting methods will be applied to research at TAU.

Researchers: From Electrical and Computer Science: **Prof. Lior Wolf.** From Electrical Engineering: **Prof. Meir Feder, Prof. Raja Giryes.** From Physics and Astronomy: **Prof. Haim Suchowski.** From Neurobiology, Biochemistry & Biophysics: **Prof. Nir Ben Tal, Prof. Pablo Blinder, and Prof. Miguel Weil.** From Zoology: **Prof. Yossi Yovel.**

Data Access with Privacy, Security, and Accountability: Towards Virtual Research Rooms

Information about people is key to making informed decisions and driving research in medical and social sciences. But how can such data be used without sacrificing privacy? Here we form a unique collaboration of core researchers and researchers from social sciences and law, together with the **Israeli Central Bureau of Statistics (ICBS)**. The research team will develop new theoretically grounded methods and algorithms designed to provide private, secure, and accountable data access. These will be deployed in virtual research rooms that will be used by researchers at TAU and other Israeli research institutions.

Researchers: **Prof. Eran Toch** (Industrial and Intelligent Systems Engineering), **Prof. Ran Gilad-Bachrach** (Bio-Medical Engineering), **Prof. Michal Feldman** (Computer Science and AI), **Prof. Yishay Mansour** (Computer Science and AI), **Prof. Michael Birnhack** (Law), and **Prof. Analia Schlosser** (Economics).

CBS 5 safes.

The TAU Brain-MRI Bank Project

Understanding the human brain is one of the greatest challenges in modern science. A key empirical tool in the arsenal is neuroimaging and specifically MRI. The data generated by imaging studies are complex and their analysis requires the application of advanced DS methods, as well as the development of new options. In this project, we propose the creation and utilization of a neuroimaging database at TAU, which will be unique in terms of size (over 10000 subjects) and the multi-modality of the collected data. We will also form a collaboration of core DS researchers and neuroscience collaborators with the objective of designing new methodologies to drive scientific discovery.

Researchers: From Neurobiology, Biochemistry & Biophysics: **Prof. Yaniv Assaf, Prof. Tom Schonberg.** From Mathematical Sciences: **Prof. Saharon Rosset, Prof. Ruth Heller.** From Psychological Sciences: **Prof. Galit Yovel.** From Biomedical Engineering: **Prof. Hayit Greenspan.** From Medicine: **Dr. Ido Tavor.**

The TAU EMR Research Hub Project

Modern healthcare is strongly driven by data, and Israel is a powerhouse in terms of quality and coverage of electronic medical records. Here, we form a collaboration of core DS researchers, computational biologists and healthcare professionals towards joint research on these topics. The group curates existing and new datasets and develops novel techniques with the aim of using them to make scientific discoveries and improve healthcare. In particular, the group was the first-ever to demonstrate the clinical utility of polygenic risk score (PRS) models in Israel by developing a predictor for breast cancer in Ashkenazi Jewish women, and expanded existing Mendelian Randomization methods for estimating the causal effect of gene-environment interactions and analyzed colorectal cancer data.

Researchers: **Prof. Ron Shamir** (Computer Science and AI), **Prof. Uri Nevo** (Biomedical Engineering), **Prof. Ran Gilad-Bachrach** (Biomedical Engineering), **Prof. Malka Gorfine** (Mathematical Sciences), **Prof. Rani Elkon** (Medicine).

High Impact Grants

The primary mission of the TAD center is to foster groundbreaking research that involves AI and DS. To achieve this aim, TAD announced in 2021 a funding opportunity for high impact research projects. **2** projects were selected to receive full funding of **$300,000** for **3** years.

### Machine and Deep Learning for Smart Electromagnetism and Photonics

We developed an inverse design model that retrieves the location and orientation of optical elements by analyzing the camera output. This method is critical for identifying root causes of misalignment, troubleshooting optical system errors, and enabling automated realignment. By leveraging computational techniques, the model enhances system stability, reduces manual adjustments, and improves overall performance in complex optical setups.

Researchers: **Prof. Haim Suchowski** (Physics and Astronomy) & **Prof. Nadav Cohen** (Computer Science and AI)
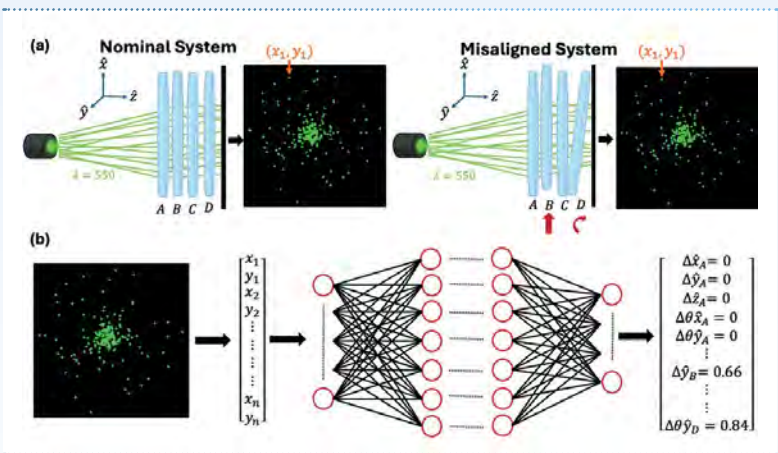
Overview of the misalignment diagnosis framework. (a) Comparison between spot diagrams from a nominally aligned system and a misaligned system, where small perturbations in lens positions or orientations produce measurable shifts in the ray intersection pattern at the image plane. (b) Schematic of the learning pipeline: the spot diagram (collection of (xi, yi) ray hit coordinates) is flattened into a feature vector and fed into a fully connected neural network, which regresses the 5-DOF misalignment parameters (decenter Δx, Δy, Δz and tilt about x, y axes) for each optical element.

The Demand for and Supply of Biased News: Evidence from Article-Level Slant
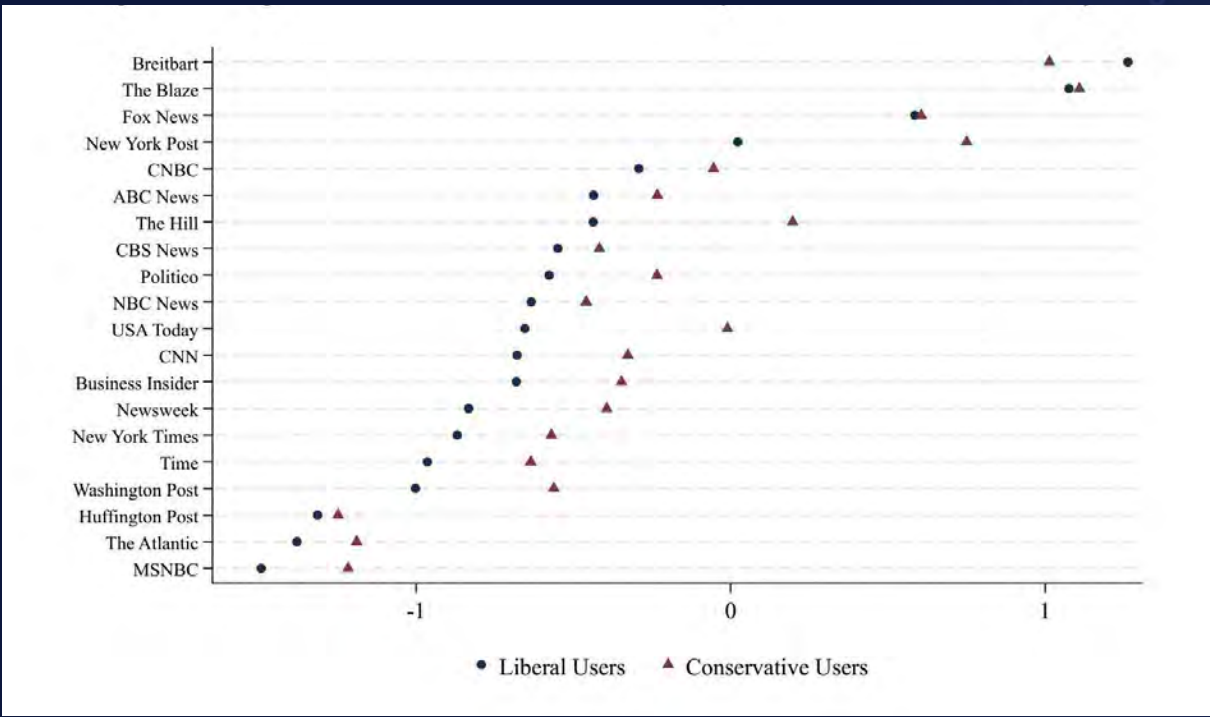
The figure shows the clicks-weighted average slant of articles by Facebook users' political affinity and outlet. The sample includes all hard news articles published online by the top 20 U.S. news outlets in 2019 that are in the URL-level Facebook Activity Dataset. The slant scale goes from -2.5 (extremely favorable to the Democratic party) to 2.5 (extremely favorable to the Republican party). See paper: Braghieri, L., Eichmeyer, S., Levy, R., *et al.* Article-Level Slant and Polarization of News Consumption on Social Media. *SSRN* 2024.

How polarized is news consumption on social media? We fine-tune a large-language-model to assign a content-based measure of slant to the near-universe of hard-news articles published online by the top 100 U.S. outlets in 2019. We find that polarized news consumption on Facebook, defined as the difference in the average slant of articles consumed by Republicans and Democrats on the platform, is arguably high. We identify pro-attitudinal news consumption within outlets as a crucial mechanism. Analyzing the distribution of slant on the production side, we find that 67% of the article-level variation in slant is within rather than across outlets.

Researchers: **Dr. Ro'ee Levy** (Economics), with collaborators: **Dr. Luca Braghieri** (University of Munich), **Dr. Sarah Eichmeyer** (University of Munich), **Prof. Markus Mobius** (Microsoft Research), and **Dr. Jacob Steinhardt** (UC Berkeley)

TAD Call for Proposals in AI and Data Science, 2023

The TAD 2023 grants, amounting to a total of **3.2** million NIS were awarded to a broad range of projects in the fields of AI and DS. The center awarded **15** regular grants and **6** seed grants to support new and innovative ideas. These grants represent the diversity of research areas in which AI & DS can play a major role. The grants support **40** faculty members from **8** different faculties:

AI-Based Methodologies for Phylogeny: Model Selection and Tuning Dataset-Specific Search Parameters
Researchers: **Prof. Tal Pupko** (Shmunis School of Biomedicine and Cancer Research), **Prof. Yishay Mansour** (Computer Science and AI), **Prof. Itay Mayrose** (Plant Sciences and Food Security)

Elucidating Human Language Processing with Large Language Models
Researchers: **Prof. Aya Meltzer Asscher** (Linguistics), **Prof. Jonathan Berant** (Computer Science and AI)

Estimating Real-World Step Length from Inertial Measurement Units Using Advanced Machine Learning Techniques
Researchers: **Dr. Neta Rabin** (Industrial and Intelligent Systems Engineering), **Prof. Jeffrey Hausdorff** (Health Professions)

Generalized Regression Discontinuity Design with Multiple Time Periods and Comparison Groups for Causal Inference: Theory and Practice
Researchers: **Dr. Daniel Nevo** (Mathematical Sciences), **Dr. Itay Saporta-Eksten** (Economics), **Dr. Analia Schlosser** (Economics)

Generative Models for the Design and Analysis of Quantum Devices
Researchers: **Dr. Amit Bermano** (Computer Science and AI), **Dr. Yoav Lahini** (Physics and Astronomy)

Human-Systems Integration in AI-supported Fake News Detection
Researcher: **Prof. Joachim Mayer** (Industrial and Intelligent Systems Engineering)
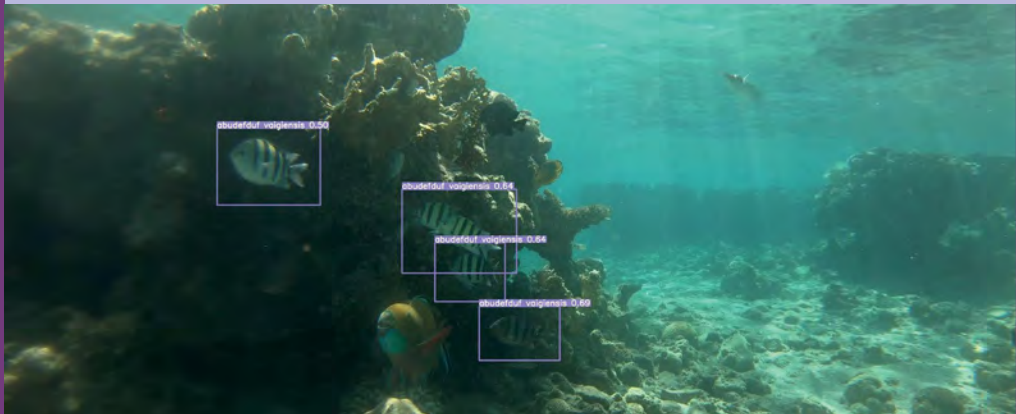
Developing an acoustic monitoring tool for coral reef health
Researchers: **Prof. Jonathan Belmaker** (Zoology), **Prof. Yossi Yovel** (Zoology), **Dr. Yoav Ram** (Zoology)

Learning the Dynamics of Chaos and Turbulence
Researchers: **Prof. Yaron Oz** (Physics and Astronomy), **Prof. Lior Wolf** (Computer Science and AI)

Machine Learning of Collective Variables for Accelerating Molecular Dynamics Simulations
Researchers: **Dr. Barak Hirshberg** (Chemistry), **Dr. Yohai Bar Sinai** (Physics and Astronomy)

Magnetic Sweet AI: Metabolic Brain Cancer Imaging Using Deep MRI of a Sugar-Based Contrast Agent
Researchers: **Dr. Or Perlman** (Biomedical Engineering), **Prof. Gil Navon** (Chemistry)

Mathematical Foundations of xAI and their Applications to Personalized Medicine and Public Health
Researchers: **Dr. Uri Obolski** (Public Health), **Prof. Ran Gilad Bachrach** (Biomedical Engineering)

Paleography Powered by Learning: Analyzing Cuneiforms with Neural Networks
Researchers: **Dr. Hadar Elor** (Electrical and Computer Engineering), **Prof. Yoram Cohen** (Archaeology)

Under the Hood of the American Supreme Court: Identifying Authorship in Unsigned Opinions
Researchers: **Prof. Ronen Avraham** (Law), **Prof. Tamar Kricheli-Katz** (Law), **Prof. Roded Sharan** (Computer Science and AI)

Dating the Dead Sea Scrolls Using Computational linguistics Tools
Researchers: **Dr. Eshbal Ratzon** (Jewish Philosophy), **Prof. Nachum Dershowitz** (Computer Science and AI)

Using Machine Learning to Understand the Impacts of Climatic Variability on Human Behavior
Researcher: **Prof. Ram Fishman** (Public Policy)

Seed Grant Awardees

Developing and Implementing an Algorithmic Toolset for Data-Driven Music-Analytical Research
Researcher: **Dr. Uri Binyamin Rom** (Music)

Geometry-Oriented Dependence Measures
Researcher: **Dr. Anatoly Khina** (Electrical and Computer Engineering)

Identifying and Characterizing New Biomarkers for Alcohol Addiction Using Artificial Intelligence

Researcher: **Prof. Segev Barak** (Psychological Sciences)

Midlife Predictors of Exceptional Survival in a Cohort of 10,000 Israeli Male Employees
Researchers: **Prof. Yariv Gerber** (Public Health), **Prof. Yael Benyamini** (Social Work)

Using Inverse Reinforcement Learning to Understand what is Being Learned in Motor Learning
Researcher: Prof. Jason Friedman (Health Professions)

Large Scale Acoustic Based Navigation – a Machine Learning Approach
Researchers: **Prof. Yossi Yovel** (Zoology), **Prof. Raja Giryes** (Electrical and Computer Engineering)

AI for Sustainability and Education, 2023
(Joint with Google)

As part of their ongoing collaboration, Google and TAD launched a new 3-year program for the promotion of AI and DS research, which focuses mainly on AI research for Sustainability and for Education.

Left to right (standing): Prof. Noa Shenkar (Life Sciences), Prof. Gal Elidan (Google Research), Dr. Deborah Cohen (Google Research), Dr. Shiri Stempler (TAD), Prof. Hadas Mamane (Engineering), Niv Efron (Google Research), Prof. Meir Feder (TAD); (sitting): Offir Inbar (Geophysics), Dr. Arnon Hershkovitz (Education), Dr. Naama Rozen (Education), Dr. Ella Daniel (Education). Photo: Ofra Ron Mazor

Artificial Intelligence for the Impact of Floods on Users' Water Quality
Researchers: **Prof. Vered Blass** (Industrial and Intelligent Systems Engineering), **Prof. Hadas Mamane** (Mechanical Engineering)

Deep Learning Based Technology for Managing the Secondary Treatment Process in Wastewater Treatment Plants
Researcher: **Prof. Dror Avisar** (Geography)

Harnessing AI for Development of Novel Approaches to Control the Spread of Invasive Species by Marine Vessels
Researchers: **Prof. Noa Shenkar** (Zoology), **Prof. Tal Pupko** (Shmunis School of Biomedicine and Cancer Research)

Harnessing Creativity through Representation Modelling of Students' Problem-Solving Processes
Researchers: **Dr. Arnon Hershkovitz** (Education), **Dr. Noam Koenigstein** (Industrial and Intelligent Systems Engineering)

Promoting Collaborations
between Google and TAD Researchers:

The joint program included research grants for collaborative teams of researchers from TAD and Google.

These are the **7** teams that received grants in 2024:

AI and Satellite Imagery Analysis for Methane Detection

Dr. Emily Elhacham (TAU), **Prof. Gil Markovich** (TAU) and **Niv Efron** (Google)

Automating Task Execution and Reference-Free Evaluation of Vision-Language Models via Instruction-Conditioned Captions

Prof. Raja Giryes (TAU), **Yonatan Bitton** (Google) and **Idan Szpektor** (Google)

Connecting 3D Neural Representations with Language

Dr. Hadar Averbuch-Elor (TAU) and **Peter Hedman** (Google)

Educational Values in Human-LLM Interaction

Dr. Ella Daniel (TAU) and **Prof. Gal Elidan** (Google)

Eye in the Sky for Colourful Diversity

Prof. Yuval Sapir (TAU), **Yotam Gigi** (Google) and **Genady Beryozkin** (Google)

LLMs for Tutoring Coding Courses

Dr. Amir Rubinstein (TAU), **Dr. Michal Kleinbort** (TAU) and **Prof. Gal Elidan** (Google)

Offshore Seaweed Protein Production for Food: Predicting Ulva. sp Biomass Productivity and Protein

Prof. Alexander Golberg (TAU) and **Avichai Tendler** (Google)

Ideation workshop for researchers in TAD and Google to promote new collaborations. Google offices, July 2023. Photo: TAD

Addressing AI Social Risks Grants - TAD and Shamgar Center for Digital Law and Innovation

Are Decision-Making "Experts" Immuned from Potential xAI Risks?

Prof. Ran Gilad Bachrach (Biomedical Engineering) and **Prof. Niva Elkin Koren** (Law)

ARTificial DEMOCRACIES

Dr. Tamar Mayer (Arts) and **Dr. Udi Sommer** (Political Science)

Is Chat-GPT's Financial Advice (Unintentionally) Gender Biased?

Prof. Gal Ostreicher-Singer (Management) and **Dr. Shir Etgar** (Communication)

Measuring & Promoting Critical Thinking Regarding Legal AI Decision Support Systems

Prof. Assaf Hamdani (Law) and **Prof. Goren Gordon** (Industrial and Intelligent Systems Engineering)

Collaborative Clinical Bioinformatics and AI Research Grants

A new funding program to foster collaborations between clinicians and basic research scientists in the fields of AI and bioinformatics of TAD Center, Edmond J. Safra Center for Bioinformatics and Shaare Zedek Medical Center

AI for early diagnosis of autism spectrum disorder with RNA expression profiles combined with phenotypic assessment
David Gurwitz, Medicine, TAU | **Adi Aran**, MD, Pediatric Neurology Unit, SZMC

Anticipating permanent pacemaker implantation after trans-catheter aortic valve implantation: A deeplearning based prediction model utilizing pre-procedure computerized tomography angiography
Lior Wolf, Computer Science and AI, TAU | **Arik Wolak**, MD, Jesselson Integrated Heart Center, SZMC | **Elad Asher**, MD Jesselson Integrated Heart Center, SZMC | **Ranel Loutati**, Jesselson Integrated Heart Center, SZMC

Identifying trajectories of the six-minutes walk test in heart failure prognostication: A machine learning approach
Uri Obolski, Medicine, TAU | **Yariv Gerber**, Medicine, TAU | **Tal Hasin**, MD, Jesselson Integrated Heart Center, SZMC

New Collaborative Program in Clinical Bioinformatics and AI Research - Kickoff Meeting in Shaare Zedek Medical Center. Photo: TAD

Integrative multi-omic analysis of response to dietary interventions in pediatric patients with Crohn's disease
Elhanan Borenstein, Medicine & Computer Science and AI, TAU | **Dotan Yogev**, MD, **Juliet Keidan** Institute of Pediatric Gastroenterology and Nutrition, SZMC

Validation of a machine learning algorithm for early diagnosis of Gaucher disease
Gabriel Chodick, Medicine, TAU | **Shoshana Revel-Vilk**, MD, Gaucher Unit, SZMC | **Galia Zacay**, MD, Meuhedet Health Organization Research Center

TAD Call for Proposals in AI and Data Science 2025

The TAD 2025 grants, amounting to a total of **3.56** million NIS were awarded to a broad range of projects in the fields of AI and DS. The center awarded **15** regular grants and **6** seed grants to support new and innovative ideas. These grants represent the diversity of research areas in which AI & DS can play a major role. The grants support 35 faculty members from various faculties:

Seed Grants

acc2vec: Developing a Self-supervised Transformer Model for Identification of Animal Behaviors from Accelerometer Data
Dr. Yoav Ram (Zoology)**, Dr. Shay Rotics** (Zoology) and **Prof. Orr Spiegel** (Zoology)

Belief-Formation and Action Selection in Large Language Models
Dr. Mor Geva (Computer Science and AI) and **Prof. Liad Mudrik** (Psychological Sciences)

Can GenAI be used to enhance human decision making?
Prof. Tom Schonberg (Neurobiology, Biochemistry and Biophysics) and **Prof. Jonathan Berant** (Computer Science and AI)

Information Velocity of Distributed Large-Scale AI Models
Dr. Anatoly Khina (Electrical and Computer Engineering)

Uncovering Hidden Biodiversity: Leveraging Machine Learning to Identify Eukaryotic Parasites and Symbionts in Discarded Sequencing Reads
Prof. Dorothee Huschon (Zoology) and **Prof. Tal Pupko** (Shmunis School of Biomedicine and Cancer Research)
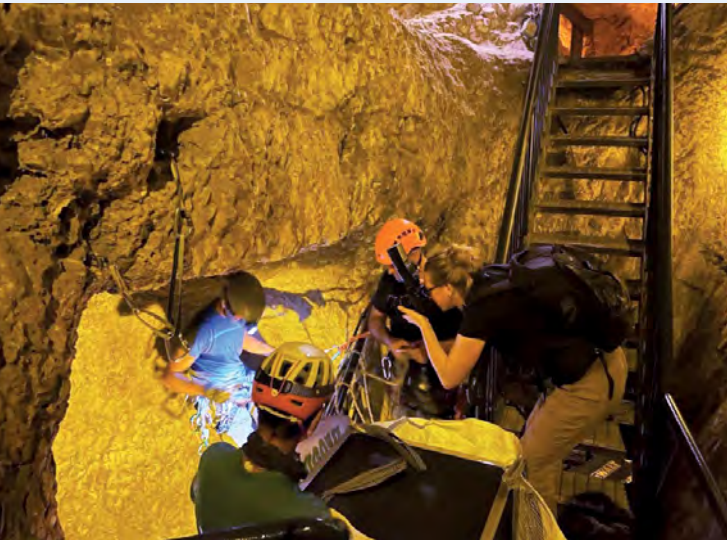
Beyond the Surface: Ancient Subterranean Settlements Revealed via Archaeology, Muon Tomography, and Machine Learning Imaging
Prof. Erez Etzion (Physics and Astronomy) and **Prof. Oded Lipcshitz** (Archeology)

Full Grants

Data-Driven Decision-Making in High Schools to Improve Achievements, Prevent Dropout, and Efficiently Allocate Resources
Dr. Genia Rachkovski (Economics) **and Prof. Analia Schlosser** (Economics)

Deep Learning Driven Detection and Characterization of Freezing of Gait Associated with Parkinson's Disease from Daily Living Videos
Dr. Or Perlman (Biomedical Engineering) and **Prof. Jeffrey Hausdorff** (Medicine)

Multimodal Approach for OCT-omics: Personalized Treatment and Failure Prediction in Diabetic Macular Edema (DME)
Prof. Gabriel Chodick (Medicine) and **Prof. Lior Wolf** (Computer Science and AI)

Leveraging a Large Database and Modern Analytics to Assess the Implications of Gestational Diabetes Mellitus for Maternal and Infant Physical and Mental Health
**Prof. David M. Steinberg** (Statistics and Operations Research) and **Prof. Yael Benyamini** (Social Work)

Leveraging Transformers to Uncover Neural Computations in the Human Visual Cortex
Prof. Galit Yovel (Psychological Sciences) **and Dr. Mor Geva** (Computer Science and AI)

Phenotype-Driven Parallel Embedding of Multi-Omic Data Integration
Prof. Elhanan Borenstein (Medicine & Computer Science and AI)

Urban Traffic Monitoring with AI-Enhanced Fiber-Optic Sensing
Prof. Ariel Lellouch (Geophysics) and **Prof. David Mendlovic** (Electrical and Computer Engineering)

Genomic Language Models Integrating Hierarchical Biological Knowledge
Prof. Dudu Burstein (Shmunis School of Biomedicine and Cancer Research)
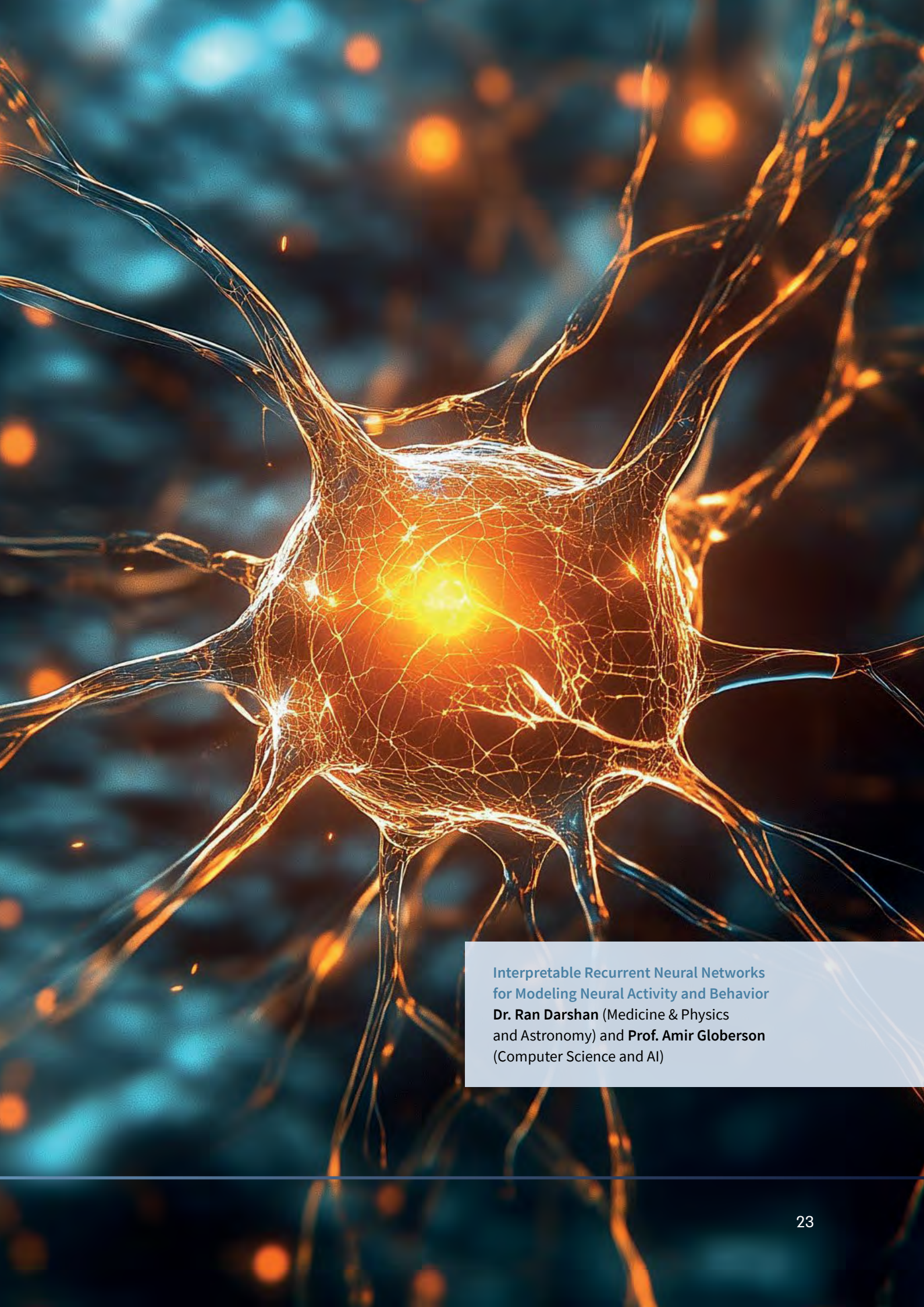
Interpretable Recurrent Neural Networks for Modeling Neural Activity and Behavior
Dr. Ran Darshan (Medicine & Physics and Astronomy) and **Prof. Amir Globerson** (Computer Science and AI)

Deep Learning Analysis and Enhancement of Free-Space Optical Communication in Atmospheric Turbulence
Prof. Yaron Oz (Physics and Astronomy) and **Prof. Ady Arie** (Electrical and Computer Engineering)

Harnessing AI for Efficient Phylogenetic Tree Reconstruction: An Adaptive Deep Reinforcement Learning Approach
Prof. Tal Pupko (Shmunis School of Biomedicine and Cancer Research) and **Prof. Yishay Mansour** (Computer Science and AI)

Leveraging Smartphone Data for Continuous Monitoring in Bipolar Disorder: A Data-Driven Approach
Prof. Uri Nevo (Biomedical Engineering) and **Prof. Yoav Benjamini** (Statistics and Operations Research)

Pre-train, Predict, Prescribe - Applying Large Models to Optimize Treatments of Infectious Diseases
Prof. Ran Gilad Bacharach (Biomedical Engineering) and **Prof. Uri Obolski** (Medicine)

AI-Driven Touchless Pupillometry for Continuous Monitoring in the Neurological Intensive Care Unit
Prof. Yuval Nir (Medicine), **Prof. Israel Gannot** (Biomedical Engineering) and **Prof.Shai Avidan** (Electrical and Computer Engineering)

Global Distribution of Flower Colors
Prof. Yuval Sapir (Plant Sciences and Food Security) **and Prof. Itay Mayrose** (Plant Sciences and Food Security)

TAD and Google 2025 AI & Data Science for Societal Impact

Aligning Social Media Algorithms with Human Psychology
Dr. Michael Gilead (Psychological Sciences)

Efficient Image Generation for multimodal learning
Prof. Raja Giryes (Electrical and Computer Engineering)

Nowcasting Thunderstorms to Protect Lives in Africa
Prof. Colin Price (Geophysics)

Scholarship Programs

PhD Excellence Fellowships, 2021

The center awarded four excellence PhD scholarships (starting October 2021). Each scholarship is planned for **3** years. One of the scholarships was given to a student in core DS research and three scholarships were awarded to students in applied DS fields:

Ben Kantor Social Sciences (advisor: Dr. Inbal Ben Ami Bartal)

Keren Halabi Plant Sciences and Food Security (advisor: Prof. Itay Mayrose)

Noam Razin Computer Science and AI (advisor: Prof. Nadav Cohen)

Yotam Liel Management (advisor: Prof. Lior Zalmanson)

Left to right: Ronit Levavi-Morad, Avery Deveto, Rasha Jaber, Ameen Ali, Prof. Yossi Matias, Prof. Meir Feder. Photo: Ofra Ron Mazor

Left to right: Keren Halabi, Prof. Ariel Porat, Prof. Meir Feder, Yotam Liel, Noam Razin. Photo: Ofer Amram

Graduate Program Scholarships, 2023

Joint with Google

Ameen Ali

PhD candidate, Computer Science and AI (advisor: Prof. Lior Wolf)
Research Title: **Using explainability in order to provide feedback to deep neural networks in a way that would promote fairness**

Avery Deveto

PhD candidate, Zoology (advisors: Prof. Yoni Belmaker, Prof. Roi Holtzman)
Research Title: **AI for prediction of invasive species**

Rasha Jaber

Master's student, Education (advisor: Dr. Arnon Hershkovitz)
Research Title: **Analyzing student behavior while engaging in interactive mathematics sorting tasks**

Fellowships to Students in Meduyakot Program, 2023-2035

Prof. Tova Milo, Dean of Exact Sciences Faculty and students in Meduyakot program. Photo: Yael Tzur

The Meduyakot Program at Tel Aviv University's Faculties of Exact Sciences and Engineering was launched in 2022 to address the significant underrepresentation of women in STEM.

The program supports female students through mentorship, networking opportunities, and a strong community, encouraging them to pursue advanced degrees and leadership roles in academia and industry.

TAD supports this program with fellowships to the following students:

Adi Haviv (Computer Science and AI)

Avital Shamir (Biomedical Engineering)

Daia Maatuk Gavy (Computer Science and AI)

Noy Makhluf (Industrial and Intelligent Systems Engineering)

Barel Travel Scholarships, 2023-2025

This program is funded with the support of Dr. Monique Barel, in the memory of Sylvain Barel.

Dan Coster, Exact Sciences
Risk Modeling of Time-Varying Covariates Using an Ensemble of Survival Trees: Predicting Future Cancer Events
Conference: AAAI, SPACA 2023, USA.

Maya Bechler, Exact Sciences
TREE-G: Decision Trees Contesting Graph Neural Networks
Conference: AAAI 2024, Canada.

Neri Berman, Exact Sciences
Using past seismicity to predict the magnitude of future earthquakes
Conference: Statistical Seismology conference 2024, China.

Ofer Shinar, Social Sciences
Confessions in Times of Global Crisis: Semantic Network Analysis of Student Discourse on Social Media in the Midst of the Covid-19 Pandemic
Workshop: Media and Emotional Mobilization 2023, Sweden.

Or Hirschorn, Engineering
Optimize and Reduce: A Top-Down Approach for Image Vectorization
Conference: AAAI 2024, Canada.

Yoni Choukroun, Exact Sciences
Deep Quantum Error Correction
Conference: AAAI Conference 2024, Canada.

Yuval Asher, Engineering
Explaining Vision Models by Learning to Mask
Conference: IEEE International Conference on Data Mining 2023, China.

Adi Mager, Exact Sciences
Leveraging AI for Material Identification in Unauthorized Dumps for Circular Economy Applications
Conference: IDSAI 2025 , Israel.

Alon Arad, Exact Sciences
Improving Multi-Class Calibration through Normalization-Aware Isotonic Techniques
Conference: ICML 2025, Canada.

Arbel Yaniv, Engineering
Explanatory Analysis and Machine Learning for City-Scale EV Charging Demand Prediction
Conference: Global Research Conference on Renewable Energy and Sustainable Development 2024, Germany.

Assaf Ben Kish, Engineering
Mitigating Open Vocabulary Caption Hallucinations
Conference: Empirical Methods in Natural Language Processing 2024 (EMNLP), USA.

Bruria Samuel, Life Sciences
Plasmids Fight Back: Anti Defense Systems Boost Conjugation Efficiency
Conference: CRISPR 2025 , New Zealand.

Sagi Ben Itzhak, Engineering
Localization-Guided Supervision for Robust Medical Image Classification by Vision Transformers
Conference: ECCV 2024, Milan.

Dr. Monique Barel, Francis Barel and TAU French Friends President Prof. François Heilbronn, awarding the student Bruria Samuel with TAD-Barel scholarship as part of the French Friends Ceremony in May 2025. Photo: TAD
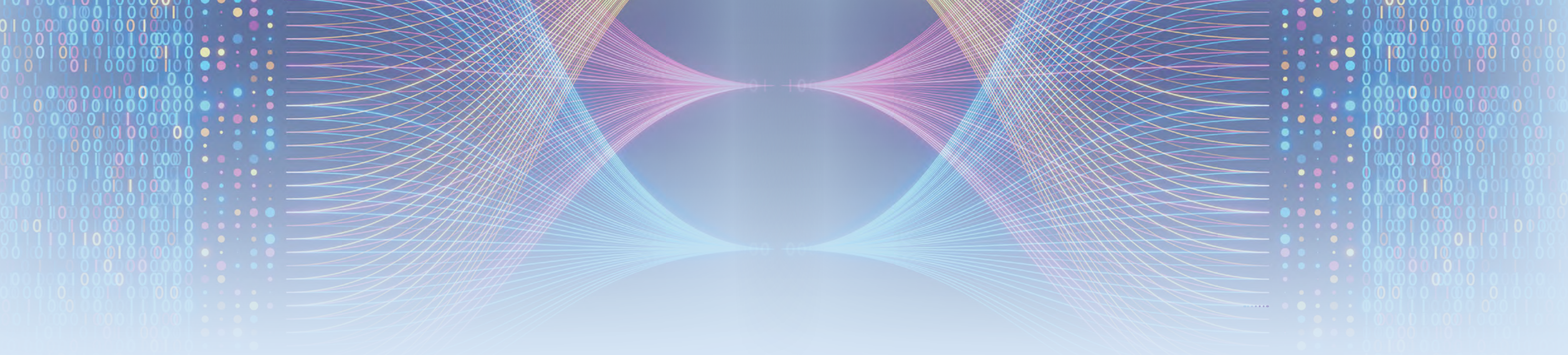
Bridge Unit

The "Bridge" unit provides expert guidance and consultation services to researchers and graduate students seeking to advance their work in DS and AI. Our team specializes in facilitating meaningful collaborations with distinguished faculty members at TAU and ensuring seamless integration into ongoing research initiatives.

In addition to fostering research partnerships, we offer comprehensive consultation services in DS and AI, along with co-advising support for top-tier project and master's students.

A key aspect of our mission is delivering high-quality DS workshops, designed to support students in the early stages of their academic journey. These workshops play a crucial role in building foundational expertise and fostering a collaborative, innovative, and excellence-driven research culture.

The "Bridge" unit consists of two specialized teams:

1. The Statistical Lab
2. The Computational Text Analysis (CTextA) Team

The Statistical Lab

The Statistical Lab offers comprehensive support for DS projects, with a primary focus on analyzing tabular data using advanced statistical and machine learning techniques. Most of the lab's projects are affiliated with TAU.

Over the past two years, the lab has contributed to more than 100 research initiatives, collaborating with researchers from a wide range of disciplines, including Health Professions, Psychology, Brain Sciences, and Management. Additionally, our team works closely with hospitals, medical centers, and industry experts to uphold the highest standards of data analysis.

Beyond data analysis, the Statistical Lab actively supports experiment planning and provides critical input for medical protocols. Our goal is to build long-term partnerships with research labs, serving as a leading resource for sophisticated data analysis.

The lab employs 3 statisticians, all have graduate education in statistics. In some of the cases the collaboration with the lab is done as a part of a joint research.

## The Computational Text Analysis (CTextA)

The Computational Text Analysis (CTextA) team supports and advances research in computational text analysis across the faculties of Law, Humanities, Social Sciences, Management, and Arts. Our mission is to equip researchers in these fields with computational text analysis tools and expertise, foster interdisciplinary collaborations, and provide essential research infrastructure, including software, databases, storage, and access.

Since its establishment in January 2023, the team has successfully initiated collaborations with many faculty members and graduate students. The scope of these collaborations varies—some researchers seek grant-writing assistance, others require access to computational tools, and in certain cases, we play an active role in the research process.

In addition to research support, the team has conducted over 15 hands-on workshops on computational text analysis tools, five of which were specifically requested by researchers on campus. To date, these workshops have engaged a total of more than 1,000 participants.

In October 2024, the TAD Center launched the "Research Fellow Group," an initiative supporting ten outstanding graduate students from social
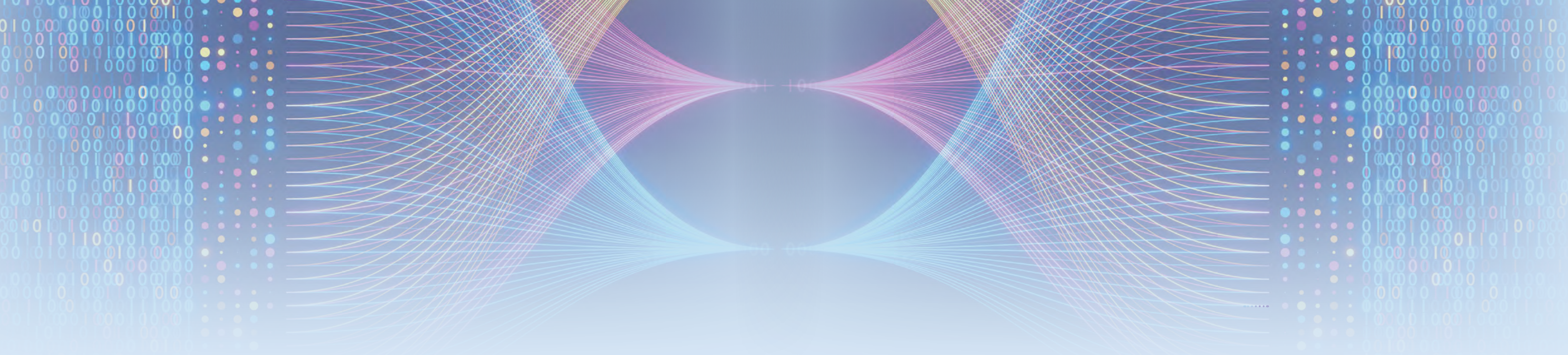
sciences, law, and humanities. Led by Dr. Vered Silber-Varod from the CTextA team, the group receives lectures on computational methods and tools while also presenting their research for discussion within the forum. TAD supports this initiative by providing a one-time stipend for participating students.

- Bluvshtein, V., Catz, A., Benjamini, Y. *et al*. Assessment of ability realization using the 4th version of the Spinal Cord Independence Measure. *Journal of Spinal Cord Medicine* (2024).

- Gertel, S., Rokach, M., Polachek, A. *et al*. Ex vivo cell-based assay for assessment of response to TNF inhibitors in patients with rheumatic diseases. *Rheumatology* (2024).

- Abeles, D., Herszage, J., Shahar, M. *et al*. Initial motor skill performance predicts future performance, but not learning, Scientific Reports. *Scientific Reports* (2023).

- Resheff, Y.S., Horesh, Y., Shahar, M. Proving Unfairness of Decision Making Systems Without Model Access. *Expert Systems with Applications* (2023).

- Kholadov, M., Markus, I., Solomon, C. *et al*. Probing muscle recovery following downhill running using precise MRI T2 relaxation times. *Magnetic Resonance in Medicine* (2023).

- Inbar, O., Shahar, M. Gidron, J. *et al*. Analyzing the secondary wastewater-treatment process using Faster R-CNN and YOLOv5 object detection algorithms. *Journal of Cleaner Production* (2023).

- Doron, A., Eviatar-Ribak, T., Vituri, A. *et al*. The COVID-19 Pfizer BioNTech mRNA Vaccine and the Frequency of Seizures. *Clinical Neurology and Neurosurgery* (2023).

- Wolpe, N., Vituri, A., Shahar, M. *et al*. The longitudinal structure of negative symptoms in treatment resistant schizophrenia. *Comprehensive Psychiatry* (2023).

- Ger, Y., Shahar, M., Jones, P.B. Using recurrent neural network to estimate irreducible stochasticity in human choice-behavior, *eLife* (2024).

- Abdelhadi, N., Klein, S., Shahar, M. et al. Analysing online forums to identify information needs and knowledge gaps in patients with left ventricular assist devices: a qualitative study. *European Journal of Cardiovascular Nursing* (2024).

- Sade, O., Fischel, D., Barak-Broner, N. *et al*. A Novel Super-Resolu'on Microscopy Platform for Cutaneous Alpha-Synuclein Detec'on in Parkinson's Disease. *Frontiers in Molecular Neuroscience* (2024).

- Levy, O., Shahar, S. Artificial Intelligence for climate change biology: from data collection to predictions. *Integrative and Comparative Biology* (2024).

- Gurevitch, G., Lubianiker, N., Markovitz, T. *et al*. Amygdala Self-Neuromodulation Capacity as a Window for Process-Related Network Recruitment. *Philosophical Transactions of the Royal Society* (2024).

- Silber-Varod, V., Lerner, A. Introducing the Volume of Extremity (VoX) method to integrate prosodic data into discourse analysis. *Language and Communication* (2023).

- Melnikov, S., Klein, S., Shahar, M. *et al*. Using Topic Modeling to Understand Patients' and Caregivers' Perspectives About Left Ventricular Assist Device: Thematic Analysis. *Journal of Medical Internet Research* (2024).

Research Communities

TAD center has established **14** communities in various research fields of DS and AI with the objective of sharing knowledge and promoting research collaborations. This work is led by Dr. Shiri Stempler, Executive Director at TAD, together with faculty members from the various fields. More than **320** faculty members and their graduate students at TAU participate in the TAD communities and their activities.

Highlighted Events

Causal Inference Community, led by TAD members: **Dr. Dan Zeltzer** (Economics) and **Prof. Daniel Nevo** (Statistics and Operations Research).

Prof. Fabrizia Mealli, Statistics, University of Florence and Economics, European University Institute. "Selecting Subpopulations for Causal Inference in Regression Discontinuity Designs". June 2023. Photo: TAD

Fundamentals of AI and DS Community
Deep Learning Theory Retreats 2023 & 2024, led by **Prof. Amir Globerson** (Computer Science and AI), **Prof. Nadav Cohen** (Computer Science and AI) and **Dr. Shiri Stempler**.

Photo: TAD

Health & Biomedicine Community
Joint Program with Shaare Zedek and Edmond J. Safra Center for Bioinformatics at TAU.

To foster collaborations between researchers in TAD's Health and Biomedicine Community, Edmond J. Safra Center for Bioinformatics and physicians at the Shaare Zedek Medical Center we held a kickoff meeting in Shaare Zedek Medical Center. July 2023. Photo: TAU

AI in the Physical Sciences
1st Israeli Phys-4-DL Day.
Led by **Dr. Yohai Bar-Sinai** (Physics and Astronomy).

The 1st Israeli Phys-4-DL meeting brought together the local scientists interested in applying physics-style research methodologies to deep learning. June 2024. Photo: TAD

AI and Education Community
Led by **Dr. Arnon Hershkovitz** (Education)
and **Prof. Goren Gordon** (Industrial and Intelligent
Systems Engineering).

Prof. Yoav Bergner, The Department of Administration, Leadership,
and Technology, NYU - "Can LLMs evaluate innovative assessment
items? Applications to collaborative problem-solving in
Mathematics". Photo: TAD

**AI Ethics and Law +
AI & Society Communities**
Addressing AI Social Risks Workshop

In the workshop awardees of the joint grant program
by the Center for AI and Data Science (TAD) and
the Shamgar Center for Digital Law discussed their
funded research. Prof. Tamar Mayer (Arts) presented
her joint research with Prof. Udi Sommer (Political
Sciences) on ARTificial Democracies. Photo: TAD

Highlighted New Interdisciplinary Collaborative Research Projects Promoted and Funded by TAD

Prof. Roded Sharan
(Computer Science and AI)

Prof. Ronen Avraham
(Law)

**Prof. Tamar
Kricheli-Katz** (Law)

Under the Hood of the American Supreme Court: Identifying Authorship in Unsigned Opinions

The Supreme Court of the United States (SCOTUS) issues 10–15 % of its opinions unsigned, concealing authorship. Traditionally, unveiling authors required the posthumous release of Justices' personal papers. We trained our AI algorithm to achieve real-time authorship probabilistic identification, encompassing 17 Justices and 4,069 opinions from 1994 to 2024. Our algorithm identified the likely authors of the March 2024 Trump v. Anderson case, which enabled Donald Trump to run for office. Moreover, our algorithm unveiled the likely authorship in significant unsigned COVID-19 era cases, estimated with high probability individual parts of the joint dissent in the Obamacare Case (2012), and discerned the likely authors of the landmark cases of Bush v. Gore (2000). Applications range from legal research to decoding SCOTUS internal dynamics. Compared to prior methods, our study demonstrates a substantially higher accuracy rate of 91 per cent over a much longer period of time, offering timely insights into the nuances of SCOTUS decision-making. To facilitate further research, we provide a public web server. Avraham, R., Rami, N., Kohn, I. *et al*.

Lifting the American Supreme Court Veil: Identifying Authorship in Unsigned Opinions, Journal of Legal Analysis (2025).

Dr. Tamar Mayer
(Arts)

Prof. Udi Sommer
(Political Science)

ARTificial DEMOCRACIES

This multidisciplinary exploratory research project addressed the relationship between AI and the erosion of democracy in contemporary societies through flooding of fabricated information. It positions art and the art institution as focal points of its exploration, differentiating conceptions of the real inside and outside the art gallery, while examining art's role in reassessing the political and democratic implications of AI. It explored the implications of AI at the intersection of politics and art, with a view towards the 2024 Presidential Elections in the USA as a potential point of singularity.

Prof. Noa Shenkar
(Zoology)

Prof. Tal Pupko
(Shmunis School
of Biomedicine
and Cancer Research)

Harnessing AI for development of novel approaches to control the spread of invasive species by marine vessels

In this collaboration we used the invasive ascidian Styela plicata as a model organism to investigate survival and stress tolerance under simulated voyage conditions. We applied AI classification tools to interpret survival outcomes and identify stress tolerance thresholds. These results aim to improve predictive capacity for biosecurity managers and support the development of targeted mitigation tools against biofouling-mediated invasions.

Experimental set up of voyage simulations predicting survival of the solitary ascidian Styela plicata. Photo: Noa Lev

Prof. Aya Meltzer Asscher (Linguistics)

Prof. Jonathan Berant
(Computer Science and AI)

Elucidating Human Language Processing with Large Language Models

Modern Large Language Models (LLMs) show human-like abilities in many language tasks, sparking interest in comparing LLMs' and humans' language processing. We conducted a detailed comparison of the two on a sentence comprehension task using garden-path constructions. These are sentences with local ambiguity, such as "While the boy washed the dog barked loudly", which are notoriously challenging for humans to understand. Our findings reveal that both LLMs and humans struggle with specific syntactic complexities, with some models showing high correlation with human comprehension. The study shows that LLMs do not only succeed where humans succeed, but they also fail where humans fail.
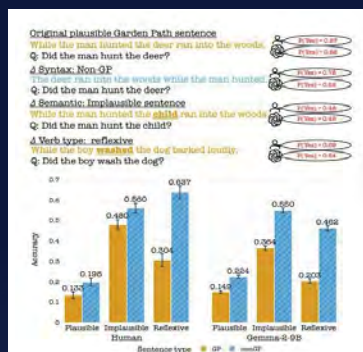
Top: The manipulations made to an example garden-path sentence along with predictions from hu- mans and LLMs for these sentences. Bottom: human and the Gemma-2-9B average performance on the different experimental conditions. The behavior of humans and Gemma-2-9B is similar.

Education

Undergraduate Programs

The relevance of AI and DS to all areas of science is unquestionable. Nevertheless, most undergraduate programs outside the exact sciences and engineering do not offer AI and DS courses. As part of the mission to offer training in AI and DS across campus, TAD has developed and now operates two clusters of AI and DS courses that are integrated with existing undergraduate programs in Social Sciences, Life Sciences, Law, Humanities, and Arts. These courses provide students with training in advanced computational tools that can be applied to address research

An info session at TAU, introducing the graduate program in collaboration with TAD. Photo: TAU

questions in their various fields of study, in new and innovative ways that are not possible with their current methodologies. Participation in the courses will also facilitate communication and interaction with scientists who work in the core areas of AI and DS.

Minor ("Hativa") in DS and AI (32 points):

The program comprises 8 courses, including background courses in math, statistics, and programming, followed by more advanced courses in data science, machine learning, deep learning, AI, and ethics. Students are required to have a prior background in high school math (4-5 points) and will undertake a research project that applies the program methods to a research question in their area of study. This minor is currently offered to students in Psychology, Economics, Political Science, Law, and Life Sciences and can potentially be expanded to other programs. Such study will provide the students

with computational understanding and tools (such as text, image, and big data analysis), which are currently extensively used and increasingly needed in both academia and industry.

Cluster ("Hekbetz") in DS and AI (16 points):

This program is designed for students with no background in mathematics and has been developed to provide a basic understanding of the terminology and tools of DS and AI in a simplified way that does not depend on mathematical and statistical knowledge. The cluster includes four courses: two courses in statistics and programming, and two courses in data science. The students will be required to conduct a research project that applies the DS/AI tools taught in the DS courses, such as text or image analysis, to their area of study. This program is offered in Humanities, Social Sciences and Law.

Graduate Program

The TAD Graduate Program is a prestigious, cross-disciplinary initiative jointly led by the Schools of Computer Science, Electrical Engineering, Mathematics, Sagol School of Neuroscience, and the Faculty of Life Sciences. It is tailored for exceptional students pursuing a direct PhD, requiring outstanding academic performance and success in both technical and personal interviews.

This elite program is designed to bridge the gap between theory and practice: it offers a rigorous theoretical foundation for future practitioners, while opening real-world applications of AI to those engaged in fundamental research. Our vision is to cultivate a vibrant, collaborative environment that fosters innovative, multidisciplinary exploration.

Launched in the winter of 2023, the program welcomed its second cohort in winter 2024.

Around half of the students come from Computer Science and Electrical Engineering, focusing on the frontiers of AI research. Initially, participants completed two advanced courses and a seminar approved by the participating faculties. However, beginning winter 2025, these requirements have been lifted, reflecting the program's evolution and growing flexibility. The program is now also open to exceptional first-year PhD students with strong publication records.

TAD provides up to four years of partial stipend support, contingent on regular progress evaluations. Students are also expected to actively participate in center-organized events, including seminars and retreats that aim to build community, deepen interdisciplinary ties, and spark collaborative research across domains.

Youth Programs

TAD in collaboration with TAU Youth University, launched in 2024 two youth programs for AI studies: BITS of AI and AI4Y.

The programs are led by Dr. Shiri Stempler (Executive Director, TAD) and Prof. Tal Pupko (Life Sciences & TAD management).

BITS of AI

A new youth program for AI studies for students from the periphery supported by Google.

As part of the program, students in grades 7-8 from the periphery of Israel came to TAU to learn about machine learning and AI. They were introduced to various tools in these fields and discussed the possibilities and risks of using AI.

During the course, the students met with various researchers at TAD, including Prof. Galit Yovel (Psychology), Prof. Nadav Cohen (AI and Computer Science), Prof. Oded Rechavi (Life Sciences), Prof. Raja Giryes (Electrical and Computer Engineering) and Prof. Tom Schonberg (Life Sciences), who shared their work in the fields of AI and DS. The students also visited Google and explored the VR center at TAU.

AI4Y

The AI4Youth program is designed to cultivate the next generation of AI researchers. The program selects exceptional students from grades 8-10 who demonstrate outstanding analytical skills through an admission test. Over the course of three years, these students engage in academic courses covering programming, mathematics, and machine learning. Notably, they sit for the same exams as university students enrolled in these courses. However, since the participants are still in high school, they study under the guidance of dedicated instructors during evening sessions. Throughout the program, students also attend seminars that expose them to cutting-edge AI research from both academic and industry leaders.

Students in BITS of AI course exploring the VR center at TAU. Photo: TAD

Noy Barak with the students in BITS of AI program. Photo: TAD

Events

Events are an integral part of TAD's work and mission to bring together the AI and DS community and to promote discussions and research collaborations. TAD hosted seminars, workshops and meetings during 2023 - 2025:

3.2023

TAD Annual Meeting

5.2023

TAD-Google Research Symposium –
AI & DS for Sustainability and Education

7.2023

Google-TAD Ideation Workshop and Collaboration Program

Kickoff event for a new collaborative grant program for clinicians and basic research scientists in Shaare Zedek (joint with Edmond J. Safra center for Bioinformatics and Shaare Zedek Medical Center)

6.2023

AI Disruption: Risks and Opportunities –
Discussion with six experts in AI on the risks of the latest developments and what needs to be done to make AI beneficial for humanity

9.2023

TAD ColabAI Workshop - Promoting innovative and creative interdisciplinary collaborations in AI and DS

2.2024

AI Day –
in collaboration with ICRC

Google Tools for AI and Data
Science Research

4.2024

Deep Learning Theory
2024 Retreat

7.2024

TAD & Google Annual Meeting 2024

12.2024

TAD's Hanukkah, Data
Science and AI Meeting

5.2024

TAD Graduate
Program in AI
and DS - Info Session

Addressing AI
Social Risks - TAD in
collaboration with
Shamgar Center for
Digital Law

6.2024

AI week 2024 – in
collaboration with
ICRC

Meduyakot & TAD

BITS of AI –
Graduation
Ceremony

3.2025

4th Annual conference

Infrastructure

One of the center's missions is to provide the computational resources needed for contemporary research. This is a valuable service that is provided by the center and its affiliated researchers. In addition to computation, there is a need for storage and data handling to support the huge amount of data needed for modern research.

One of the center's key missions is to supply the computational resources essential for contemporary research—a service highly valued by its affiliated researchers. Beyond raw computation, the center also addresses the critical needs for storage and data handling to support the vast amounts of data used in modern investigations.

To date, the center has invested in nine GPU machines and one CPU XEON server equipped with a 100TB storage tray. Each GPU machine is fitted with eight GPU cards and is complemented by substantial storage capacity, including SSD drives. Specifically, the center operates four low-end machines (using 2080 and 3090 GPUs), four high-end machines (with A100 GPUs), and one super high-end machine (with an H100 GPU). These systems are allocated between the engineering and computer science clusters, with access provided to researchers and graduate students on an ad hoc basis.

Collaborations

Collaboration with Industry

Google

In 2023, Google and TAD launched a new 3-year program for the promotion of AI and DS research, with financial support of $1M from Google. The program is focused mainly on AI research for Sustainability and for Education.

This program included 4 calls for research grants and scholarships:

- AI and Data Science research for Sustainability and for Education, 2023

- A call for applications for scholarships to support graduate students in AI who belong to underrepresented groups in academia - 2023

- A call for research proposals by joint teams of researchers from Google and TAD, 2024

- AI and Data Science for Societal Impact Research Grants - 2025

The launch event, held on May 1st, 2023 included a ceremony to announce the grant and scholarship awardees who were selected by the committee.

A total of **14** research grants were awarded to various projects in 2023-2025, as part of this program, and **3** scholarships to graduate students (see Grant Programs and Scholarships). In addition, this collaborative program included support for a new youth program "BITS of AI", launched in 2024 by TAD together with TAU Youth University. The program brings students in grades 7-8 from the periphery of Israel to study AI and DS at TAU.

Adi Mayrav Gilady (Google Research), introducing Gemini in the workshop Google Tools for AI and DS Research at TAU. Photo: TAD

BITS of AI students meeting with Prof. Galit Yovel (Psycological Sciences) to learn about her research. Photo: TAD

Left to Right (standing): Dr. Arnon Hershkovitz; Prof. Tal Pupko; Prof. Noa Shenkar; Prof. Yossi Matias; Prof. Meir Feder; Prof. Hadas Mamane ; (sitting): Ronit Levavi-Morad, Offir Inbar; Prof. Vered Blass; Dr. Deborah Cohen; and Dr. Shiri Stempler. Photo: Ofra Ron Mazor

Intel

In 2023, the Intel Israel team and TAD jointly applied for a highly competitive education grant from Intel's global organization. The proposal focused on developing two online courses in data science and machine learning, which would be made available on Campus.IL.

The proposal received 280,000 NIS for the course development, scheduled to launch in June 2025.

Additionally, starting in January 2025, Intel supports the center with a new AI-PC donation initiative. Four labs received the new hardware in March 2025.

Teva Pharmaceutical Industries Ltd.

In May 2025, TAD in collaboration with Teva Pharmaceutical Industries Ltd. and Edmond J. Safra Center for Bioinformatics published a new call for proposals in the fields of AI and Computational Neuroscience and Iron Swords Support. The grants aim to support collaborative efforts among computational researchers and clinicians affiliated with TAU. High-risk/ high-reward proposals are encouraged in this program with the potential to drive significant breakthroughs or major advancements in the topics of interest defined above. We expect to award 4-5 two-year grants, with each grant up to 120,000 NIS, per year.

Designing AI for Democracy

Combating Disinformation by Technological Measures

Awarding ceremony for Designing AI for Democracy competition at the presidential residence in Jerusalem, November 2024. Photo: Yael Tzur

The World Economic Forum recently declared that the dissemination of disinformation and misinformation constitutes the biggest threat to the stability of democracies around the world in the short term. It is important that we develop in Israel the technological and regulatory means for contending with attacks of disinformation and misinformation.

To address the challenge of spreading fake news and disinformation, a coalition of partners including the Shamgar Center for Digital Law and Innovation, TAD, the Edmond J. Safra Center for Ethics, the Blavatnik Center for Interdisciplinary Cyber Research at TAU together with Microsoft Israel, Bright Data, the British Embassy in Israel, the Israeli Internet Association, and Meitar Law Firm, led the "Designing AI for Democracy" competition. The competition goal was to develop technological solutions based on legal, social, and institutional understanding in order to create tools that will help identify and monitor bots, identify inauthentic campaigns on social networks, and effectively implement legislative and regulatory arrangements.

In the Emerging Startup Award category won VerifAI, an advanced software that aims to improve the reliability of digital information through advanced text analysis based on AI. The Pre-Seed Award category was won by InfluenceBlocker, which tackles the complex challenge of foreign interference and disinformation campaigns that exploit private communications.

Collaboration with Governmental Institutions

The National Water Authority ("Rashut Hamayim")

In 2024, TAD Center undertook a significant project in partnership with the National Water Authority. The project aimed to develop an advanced model for predicting the water level of the Kinneret, with a particular emphasis on extreme events that may necessitate opening the Degania Dam.

The project comprised two predictive models: a yearly forecast model and a daily forecast model. These models improved upon existing predictions by incorporating multiple data sources, including water flow measurements from the Dan River and meteorological data from rain stations. The daily model, in particular, operated at a much finer resolution while utilizing similar data sources. Currently, both models are undergoing an approval process and are expected to replace the existing forecasting models.

Building on the success of this initiative, TAD Center is now poised to collaborate on a new project focused on predicting floods in creeks and wetlands. The budget for this upcoming project is currently under review.

Israeli Health Organizations

Clalit Health Services (CHS):

Collaboration with CHS physicians on two research projects:

1. Underutilization of genetic testing in neurodevelopmental disorders in Israel - a population study

A longitudinal, retrospective population based study. Highlights an overall under-utilization of genetic evaluation for Neuro Developmental Diseases, emphasizing the need for improved awareness and national efforts to expand genetic evaluation and reduce healthcare inequalities.

May, D., Barshir, R., Rose, A. *et al*. Underutilization of genetic testing in neurodevelopmental disorders in Israel - a population study. *JAMA Netw Open* (2025).

2. Machine learning-based identification of patients at risk for Dysphagia swallowing disorders using electronic medical records

These efforts focus on enhancing expertise in CHS systems and data, to better support researchers in future collaborations.

Collaborative Program in Clinical Bioinformatics and AI Research with Shaare Zedek Medical Center

TAD and Edmond J. Safra Center for Bioinformatics (EJSCB) together with Shaare Zedek Medical Center (SZMC) and Shaare Zedek Scientific (Madait), announced a joint call for grants in clinical bioinformatics and AI, to support collaborative research projects between PIs from TAU and SZMC.

To introduce the grant program and to meet potential collaborators, we held a meeting at SZMC in Jerusalem on July 5th 2023. The meeting brought together clinicians and computational researchers, promoting discussion of collaborative research in this domain.

Grants were awarded to 5 research projects of joint teams of researchers from TAU and Shaare Zedek.

Additional Collaborative Projects Supported by TAD

Meduyakot

"Meduyakot" is a mentorship program, promoting women in exact sciences and engineering at TAU. TAD supports this important program by providing scholarships to 4 women students who study in Computer Science and Engineering and participate in the program (See Scholarship Programs section).

In addition, in 2024 TAD in collaboration with Meduyakot held a special event for the students. During the event Prof. Meir Feder and Dr. Shiri Stempler presented TAD, its activities and opportunities. Following the introduction, three leading researchers in AI and DS, all members of TAD, presented their research: Dr. Mor Geva (Computer Science and AI) discussed ChatGPT, Prof. Adi Stern (Shmunis School of Biomedicine and Cancer Research) talked about predicting future epidemics using language models, and Dr. Neta Rabin (Industrial and Intelligent Systems Engineering) presented research on data analysis with machine learning. The event also featured a mingling session, allowing students and faculty to discuss AI research at the university and academic life in general.

Dr. Mor Geva at the joint event of TAD and Meduyakot. Photo: TAD

"Resonance 4145" by the artist Ronen Shaharabani and the scientist Prof. Yossi Yovel. Photo: Elad Sarig

TAU Genia Schreiber Art Gallery

The exhibition "Re: Empathy" was launched at the TAU Art Gallery in June 2024. The curator of the exhibition is Dr. Tamar Mayer and the assistant curator is Roni Kochavi.

The exhibition focuses on empathy in the fields of psychology, philosophy, sociology, and neuroscience, through the lens of visual arts. It examines, among others, responsible uses of AI to increase pro-social behavior.

"Re: Empathy" is supported by TAD as part of an ongoing collaboration with TAU Art Gallery. A recent experiment conducted in the gallery by Dr. Tamar Mayer and Prof. Udi Sommer, and supported by a grant from TAD (ARTificial DEMOCRACIES) has shown that the gallery setting raised a sense of trustworthiness among visitors. The current exhibition builds on these findings, examining the gallery's role in building a sense of compassion in its viewers and participants.

"Re: Empathy" involves collaborations with several TAD members: Dr. Inbal Ben-Ami Bartal (Psychology & Neuroscience), Prof. Udi Sommer (Political Science), and Dr. Mor Geva (Computer Science and AI). TAD Executive Director, Dr. Shiri Stempler helped in advising and connecting the TAD researchers with the gallery.

The exhibition includes original artworks in a variety of media by Israeli artists whose works derive from societal shifts, connectedness, and the biological ability to give and receive empathy and compassion. Among these works, is an installation that explores AI and the extension of human responsiveness to others.

Data Accessibility

Access to International Biobanks and EMR Resources

UK Biobank (UKB):

We continued to support access to and utilization of UKB data for research groups, while expanding our knowledge and capabilities to provide more comprehensive assistance. A major focus this year was working with the newly released Whole Genome Sequencing dataset of 500k participants available on the Research Analysis Platform. This included developing streamlined processes for data analysis and providing guidance to students to tailor applications to their specific research needs. An additional research group was granted access to UKB data, increasing the total number of active applications from TAU to three, involving eight research groups. Additionally, we provided consultation to other groups considering applications in the upcoming year.

Lifelines:

One research group obtained access to Lifelines, a large multigenerational cohort study from the Netherlands and is currently analyzing this extensive phenotypic and multi-omics data.

These projects are led by Dr. Ruth Barshir, Director of Medical Data.

Affiliated Researchers

Arts (9)

Prof. Efrat Blumenfeld,
Architecture

Dr. Ehud Ben Arie
Film and Television,

Prof. Eran Neuman,
Architecture

Dr. Gal Raz,
Film and Television

Dr. Sefy Hendler,
Art History

Prof. Sharon Aronson Lehavi,
Theatre Arts

Prof. Talia Margalith,
Architecture

Dr. Tamar Mayer,
Art History

Dr. Uri Rom,
Music

Engineering (54)

Prof. Ady Arie,
Electrical and Computer Engineering

Prof. Alex Liberzon,
Mechanical Engineering

Prof. Alon Bahabad,
Electrical and Computer Engineering

Dr. Alon Peled-Cohen,
Electrical and Computer Engineering

Dr. Amichai Painsky,
Industrial and Intelligent
Systems Engineering

Dr. Amiram Moshaiov,
Mechanical Engineering

Prof. Amit Gefen,
Biomedical Engineering

Dr. Anatoly Khina,
Electrical and Computer Engineering

Prof. Anthony Weiss,
Electrical and Computer Engineering

Dr. Avishai Sintov,
Mechanical Engineering

Dr. Bat Hen Nahmias Biran,
Mechanical Engineering

Prof. Benny Applebaum,
Electrical and Computer Engineering

Prof. Boaz Patt-Shamir,
Electrical and Computer Engineering

Dr. Bracha Laufer-Goldshtein,
Electrical and Computer Engineering

Dr. Dan Raviv,
Electrical and Computer Engineering

Dr. Dan Yamin,
Industrial and Intelligent
Systems Engineering

Prof. Dana Ron-Goldreich,
Electrical and Computer Engineering

Prof. Dudu Burstein,
Electrical and Computer Engineering

Prof. Eran Toch,
Industrial and Intelligent
Systems Engineering

Prof. Erez Shmueli,
Industrial and Intelligent
Systems Engineering

Dr. Gili Bisker,
Biomedical Engineering

Prof. Goren Gordon,
Industrial and Intelligent
Systems Engineering

Prof. Guy Even,
Electrical and Computer Engineering

Dr. Hadar Averbuch-Elor,
Electrical and Computer Engineering

Prof. Hadas Mamane Steindel,
Mechanical Engineering

Prof. Hagit Messer-Yaron,
Electrical and Computer Engineering

Prof. Hayit Greenspan,
Biomedical Engineering

Dr. Igor Berinskii,
Mechanical Engineering

Prof. Irad Ben-Gal,
Industrial and Intelligent
Systems Engineering

Prof. Joachim Meyer,
Industrial and Intelligent
Systems Engineering

Dr. Jonatan Ostromtzky,
Digital Sciences for High-Tech

Prof. Meir Feder,
Electrical and Computer Engineering

Prof. Michal Tzur,
Industrial and Intelligent
Systems Engineering

Prof. Nahum Kiryati,
Electrical and Computer Engineering

Prof. Natan Tzvi Shaked,
Biomedical Engineering

Dr. Neta Rabin,
Industrial and Intelligent
Systems Engineering

Dr. Noam Ben-Eliezer,
Biomedical Engineering

Dr. Noam Koenigstein,
Industrial and Intelligent
Systems Engineering

Prof. Oded Maimon,
Industrial and Intelligent
Systems Engineering

Prof. Ofer Shayevitz,
Electrical and Computer Engineering

Dr. Or Perlman,
Biomedical Engineering

Prof. Raja Giryes,
Electrical and Computer Engineering

Prof. Ran Gilad-Bachrach,
Biomedical Engineering

Dr. Roi Livni,
Electrical and Computer Engineering

Prof. Shai Avidan,
Electrical and Computer Engineering

Prof. Tal Raviv,
Industrial and Intelligent
Systems Engineering

Dr. Tamir Bendory,
Electrical and Computer Engineering

Prof. Tamir Tuller,
Biomedical Engineering

Prof. Uri Nevo,
Biomedical Engineering

Prof. Vered Blass,
Industrial and Intelligent
Systems Engineering

Dr. Wasim Huleihel,
Electrical and Computer Engineering

Dr. Yoram Kozak,
Mechanical Engineering

Prof. Yossi Bukchin,
Industrial and Intelligent
Systems Engineering

Prof. Yuval Shavitt,
Electrical and Computer Engineering

Exact Sciences (70)

Prof. Abner Soffer,
Physics and Astronomy

Dr. Alon Shepon,
Porter School for the Environment
and Earth Sciences

Prof. Amir Averbuch,
Computer Science and AI

Prof. Amir Beck,
Mathematical Sciences

Prof. Amir Globerson,
Computer Science and AI

Prof. Amir Goldbourt,
Chemistry

Dr. Amir Rubinstein,
Computer Science and AI

Dr. Amit Bermano,
Computer Science and AI

Dr. Amit Birenboim
Geophysics

Dr. Amit Moscovich,
Mathematical Sciences

Prof. Anat Bremler-Barr,
Computer Science and AI

Dr. Barak Hirshberg,
Chemistry

Prof. Colin Price,
Geophysics

Prof. Dan Halperin,
Computer Science and AI

Prof. Daniel Deutch,
Computer Science and AI

Dr. Daniel Nevo,
Mathematical Sciences

Prof. Daniel Yekutieli,
Mathematical Sciences

Prof. Danny Segev,
Mathematical Sciences

Prof. David Steinberg,
Mathematical Sciences

Dr. Dmitry Batenkov,
Mathematical Sciences

Prof. Dovi Poznanski,
Physics and Astronomy

Prof. Dror Avisar,
Physics and Astronomy

Prof. Elhanan Borenstein,
Computer Science and AI

Prof. Erez Etzion,
Physics and Astronomy

Prof. Eyal Ben-Dor,
Geophysics

Prof. Eyal Heifetz,
Geophysics

Dr. Eyal Ronen,
Computer Science and AI

Prof. Felix Abramovich,
Mathematical Sciences

Prof. Gil Navon,
Chemistry

Prof. Guy Cohen,
Chemistry

Prof. Haim Avron,
Mathematical Sciences

Prof. Haim Kaplan,
Computer Science and AI

Prof. Haim Suchowski,
Physics and Astronomy

Prof. Haim Wolfson,
Computer Science and AI

Prof. Itzhak Benenson,
Geography

Prof. Jonathan Berant,
Computer Science and AI

Prof. Juval Portugali,
Geography

Prof. Lior Wolf,
Computer Science and AI

Dr. Liron Barak,
Physics and Astronomy

Dr. Mahmood Sharif,
Computer Science and AI

Prof. Malka Gorfine,
Mathematical Sciences

Prof. Michal Feldman,
Computer Science and AI

Dr. Michal Kleinbort,
Computer Science and AI

Dr. Mor Geva,
Computer Science and AI

Prof. Moshe Goldstein,
Physics and Astronomy

Prof. Nachum Dershowitz,
Computer Science and AI

Prof. Nadav Cohen,
Computer Science and AI

Prof. Nili Harnik,
Geography

Prof. Nir Sochen,
Mathematical Sciences

Prof. Roded Sharan,
Computer Science and AI

Prof. Ron Lifshitz,
Physics and Astronomy

Prof. Ron Shamir,
Computer Science and AI

Prof. Ruth Heller,
Mathematical Sciences

Prof. Saharon Rosset,
Mathematical Sciences

Prof. Shahar Maoz,
Computer Science and AI

Prof. Shay Zucker,
Physics and Astronomy

Prof. Sivan Toledo,
Computer Science and AI

Prof. Tali Hatuka,
Geography

Dr. Tomer Koren,
Computer Science and AI

Prof. Tova Milo,
Computer Science and AI

Prof. Uri Yechieli,
Mathematical Sciences

Prof. Yael Roichman,
Chemistry

Dr. Yair Carmon,
Computer Science and AI

Prof. Yaron Oz,
Physics and Astronomy

Prof. Yishay Mansour,
Computer Science and AI

Prof. Yoav Benjamini,
Mathematical Sciences

Dr. Yoav Lahini,
Physics and Astronomy

Prof. Yoel Shkolnisky,
Mathematical Sciences

Dr. Yohai Bar Sinai,
Physics and Astronomy

Prof. Yuval Ebenstein,
Chemistry

Humanities (20)

Dr. Amir Teicher,
History

Dr. Arnon Hershkovitz,
Education

Prof. Asaf Goldschmidt,
History

Prof. Audrey Addi-Raccah,
Education

Prof. Aya Meltzer-Asscher,
Philosophy, Linguistics
and Science Studies

Dr. Benzi Slakmon,
Education

Dr. Dror Dotan,
Education

Dr. Ella Daniel,
Education

Dr. Eshbal Ratzon,
Jewish Studies and Philosophy

Prof. Ido Koch,
Archeology

Prof. Ilya Levin,
Education

Prof. Jonathan Ben-Dov,
Jewish Studies and Archeology

Prof. Lilach Shalev-Mevorach,
Education

Dr. Liora Sarfati,
History

Dr. Nir Evron,
Cultural Studies

Prof. Roni Katzir,
Philosophy, Linguistics
and Science Studies

Prof. Miriam Shefer-Mossensohn,
History

Dr. Roy Tzohar,
History

Prof. Uri Yiftach,
Classics

Prof. Yoram Cohen,
Archaeology

Law (12)

Prof. Alon Klement

Dr. Amit Pundik

Prof. Assaf Hamdani

Prof. Ehud Kamar

Prof. Kobi Kastiel

Prof. Michael Birnhack

Prof. Niva Elkin-Koren

Prof. Omri Yadlin

Prof. Ronen Avraham

Prof. Tamar Kricheli-Katz

Dr. Uri Hacohen

Prof. Yoram Margalioth

Life Sciences (36)

Dr. Aldema Sas-Chen,
Shmunis School of Biomedicine
and Cancer Research

Prof. Amiyaal Ilany,
Zoology

Dr. Anan Moran,
Neurobiology, Biophysics
and Biochemistry

Dr. David Burstein,
Shmunis School of Biomedicine
and Cancer Research

Prof. Ehud Gazit,
Shmunis School of Biomedicine
and Cancer Research

Prof. Gali Prag,
Neurobiology, Biochemistry
and Biophysics

Prof. Inon Scharf,
Zoology

Prof. Irit Gat-Viks,
Shmunis School of Biomedicine
and Cancer Research

Prof. Itay Mayrose,
Plant Sciences and Food Security

Prof. Jonathan Belmaker,
Zoology

Prof. Lilach Hadany,
Plant Sciences and Food Security

Dr. Mark Shein-Idelson,
Neurobiology, Biochemistry
and Biophysics

Prof. Martin Kupiec,
Shmunis School Biomedicine
and Cancer Research

Prof. Miguel Weil,
Shmunis School of Biomedicine
and Cancer Research

Prof. Nir Ben-Tal,
Neurobiology, Biochemistry
and Biophysics

Prof. Noa Shenkar,
Zoology

Prof. Oded Rechavi,
Neurobiology, Biochemistry
and Biophysics

Dr. Ofir Levy,
Zoology

Dr. Orr Spiegel,
Zoology

Prof. Pablo Blinder,
Neurobiology, Biochemistry
and Biophysics

Prof. Roi Holzman,
Zoology

Dr. Rotem Rubinstein,
Neuroscience,Biochemistry,
and Biophysics

Dr. Shay Rotics,
Zoology

Prof. Tal Pupko,
Shmunis School of Biomedicine
and Cancer Research

Prof. Tom Schonberg,
Neurobiology, Biochemistry
and Biophysics

Prof. Uri Ashery,
Neurobiology, Biochemistry
and Biophysics

Prof. Uri Gophna,
Shmunis School of Biomedicine
and Cancer Research

Prof. Vered Padler Karavani,
Shmunis School Biomedicine and
Cancer Research

Prof. Yaniv Assaf,
Neurobiology, Biochemistry
and Biophysics

Prof. Yariv Brotman,
Plant Sciences and Food Security

Prof. Yariv Wine,
Shmunis School of Biomedicine
and Cancer Research

Prof. Yasmine Meroz,
Plant Sciences and Food Security

Dr. Yoav Ram,
Zoology

Dr. Yosef Kiat,
Zoology

Prof. Yossi Yovel,
Zoology

Dr. Yuval Sapir,
Plant Sciences and Food Security

Management (17)

Prof. Dino Levy

Prof. Evgeny Lyandres

Prof. Gal Oestreicher-Singer

Dr. Ilanit SimanTov-Nachlieli

Dr. Inbal Yahav

Dr. Jacob Mendel

Prof. Jacob Zahavi

Dr. Liat Eldor

Dr. Lior Zalmanson

Dr. Michal Hodor

Prof. Moshe Leshno

Dr. Moshe Unger

Dr. Noam Shamir

Dr. Sagit Bar-Gill

Dr. Tomer Geva

Dr. Yael Inbar

Prof. Yael Steinhart

Medicine and Health Sciences (35)

Prof. Ariel Munitz,
Medicine

Dr. Arseny Finkelstein,
Medicine

Prof. Bruria Adini,
Public Health

Dr. Daniel Bar,
Dental Medicine

Prof. David Gurwitz,
Medicine

Prof. Elhanan Borenstein,
Medicine

Prof. Gabriel Chodik,
Public Healt

Prof. Hagit Eldar-Finkelman,
Medicine

Dr. Ido Tavor,
Medicine

Dr. Ilana Dubovi,
Health Professions

Prof. Jason Friedman,
Health Professions

Prof. Jeff Hausdorff,
Health Professions

Prof. Karen B. Avraham,
Medicine

Prof. Khitam Muhsen,
Public Health

Prof. Liat Kishon-Rabin,
Health Professions

Prof. Lihi Adler-Abramovich,
Dental Medicine

Dr. Maayan Gal,
Dental Medicine

Prof. Michal Itzhaki,
Health Professions

Prof. Michal Itzhaki,
Health Professions

Dr. Mor Saban,
Health Professions

Prof. Navah Ratzon,
Health Professions

Prof. Noam Shomron,
Medicine

Dr. Noham Wolpe,
Health Professions

Dr. Oren Asman,
Medicine

Prof. Osnat Ashur-Fabian,
Medicine

Dr. Ran Darshan,
Medicine

Prof. Rani Elkon,
Medicine

Prof. Ronen Zaidel-Bar,
Medicine

Dr. Samah Hayek,
Public Health

Prof. Talma Hendler,
Medicine

Dr. Uri Ben-David,
Medicine

Dr. Uri Obolski,
Public Health

Dr. Yael Lahav,
Health Professions

Prof. Yariv Gerber,
Public Health

Dr. Yftach Gepner,
Public Health

Prof. Yuval Nir,
Medicine

Social Sciences (30)

Dr. Alex Gekker,
Communication

Prof. Amir Lupovici,
Political Science, Government
and International Affairs

Dr. Analia Schlosser,
Economics

Prof. Anastasia Gorodzeisky,
Social and Policy Studies

Prof. Dan Zeltzer,
Economics

Prof. Daphna Joel,
Psychological Sciences

Prof. Elad Segev,
Social and Policy Studies

Dr. Erez Marantz,
Social and Policy Studies

Prof. Galit Yovel,
Psychological Sciences

Dr. Genia Rachkovski,
Economics

Prof. Hanna Lerner,
Political Science, Government
and International Affairs

Prof. Isaac Ben-Israel,
Cyber

Prof. Isaac Sasson,
Social and Policy Studies

Dr. Itay Saporta Eksten,
Economics

Prof. Liad Mudrik,
Psychological Sciences

Dr. Lior Sheffer,
Political Science, Government
and International Affairs

Dr. Michael Gilead,
Psychological Sciences

Prof. Neil Gandal,
Economics

Dr. Nitzan Shahar,
Psychological Sciences

Prof. Nurit Shnabel,
Psychological Sciences

Dr. Oren Danieli,
Economics

Prof. Ram Fishman,
Public Policy

Prof. Ran Spiegler,
Economics

Dr. Roee Levy,
Economics

Prof. Roy Mukamel,
Psychological Sciences

Prof. Segev Barak,
Psychological Sciences

Dr. Shir Etgar,
Communication

Prof. Talma Hendler,
Psychological Sciences

Prof. Udi Sommer,
Political Science, Government
and International Affairs

Prof. Yael Benyamini,
Social Work

Selected List of Publications

2023

Alexander, Y., De La Vega, N., Razin, N. *et al.* What Makes Data Suitable for a Locally Connected Neural Network? A Necessary and Sufficient Condition Based on Quantum Entanglement. *Conference on Neural Information Processing Systems (NeurIPS)* (2023).

Amit, T., Shichrur, S., Shaharabany, T. *et al.* Annotator Consensus Prediction for Medical Image Segmentation with Diffusion Models. *International Conference on Medical Image Computing and Computer Assisted Interventions (MICCAI)* (2023).

Attia, A., Koren, T. How Free is Parameter-Free Stochastic Optimization?. *International Conference on Machine Learning* (2024).

Attia, A., Koren, T. SGD with AdaGrad Stepsizes: Full Adaptivity with High Probability to Unknown Parameters, Unbounded Gradients and Affine Variance. *International Conference on Machine Learning* (2023).

Bar-David, S., Zimerman, I., Nachmani, E. *et al.* Decision S4: Efficient Sequence-Based RL via State Spaces Layers. *International Conference on Learning Representations (ICLR)* (2023).

Chaikin, S., De-Beer, G., Yitzhak, N. *et al.* The invasive silver cheeked toadfish (Lagocephalus sceleratus) predominantly impacts the behavior of other non indigenous species in the Eastern Mediterranean. *Biological Invasions* (2023).

Chefer, H., Alaluf, Y., Wolf, L. *et al.* Attend-and-Excite: Attention-Based Semantic Guidance for Text-to-Image Diffusion Models. *ACM SIGGRAPH* (2023).

Choukroun, Y., Golgher, L., Binder, P. *et al.* Reconstructing the Hemodynamic Response Function with Bimodal Transformer. *International Conference on Medical Image Computing and Computer Assisted Interventions (MICCAI)* (2023).

Choukroun, Y., Wolf, L. Denoising Diffusion Error Correction Codes. *International Conference on Learning Representations (ICLR)* (2023).

Cohen-Karlik, E., Menuhin-Gruman, I., Giryes, R. *et al.* Learning Low Dimensional State Spaces with Overparameterized Recurrent Neural Nets. *International Conference on Learning Representations (ICLR)* (2023).

Erez, L., Lancewicki, T., Sherman, U. *et al.* Regret Minimization and Convergence to Equilibria in General-Sum Markov Games. *International Conference on Machine Learning* (2023).

Friedlander, T., Shmelkin, R., Wolf, L. Generating 2D and 3D Master Faces for Dictionary Attacks with a Network-Assisted Latent Space Evolution. *IEEE Transactions on Biometrics, Behavior, and Identity Science (TBIOM)* (2023).

Friedlander, T., Wolf, L. Dynamically-Scaled Deep Canonical Correlation Analysis. *The Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD)* (2023).

Fogel, Y., Feder, M. Permutation Invariant Individual Batch Learning. *IEEE Information Theory Workshop (ITW)* (2023).

Gharaba, S., Paz, O., Feld, L. *et al.* Perturbed actin cap as a new personalized biomarker in primary fibroblasts of Huntington's disease patients. *Frontiers in Cell and Developmental Biology* (2023).

Gomel, E., Shaharabany, T., Wolf, L. Box-based Refinement for Weakly Supervised and Unsupervised Localization Tasks. *IEEE International Conference on Computer Vision (ICCV)* (2023).

Gorfine, M., Zucker, D. Shared frailty methods for complex survival data: a review of recent advances. *Annual Review of Statistics and Its Application* (2023).

Inbar, O., Shahar, M., b, Gidron, J. *et al.* Analyzing the secondary wastewater-treatment process using Faster R-CNN and YOLOv5 object detection algorithms. *Journal of Cleaner Production Technology* (2023).

Katz, L., Gorfine, M. An accelerated failure time regression model for illness-death data: a frailty approach. *Biometrics* (2023).

Levi, H., Carmi, S., Rosset, S. *et al.* Evaluation of European-based polygenic risk score for breast cancer on Ashkenazi Jewish women. *Journal of Medical Genetics* (2023).

Levi, H., Carmi, S., Rosset, S. *et al.* Evaluation of European-based polygenic risk score for breast cancer on Ashkenazi Jewish women. *Journal of Medical Genetics* (2023).

Lutati, S., Wolf, L. OCD: Learning to Overfit with Conditional Diffusion Models. *International Conference on Machine Learning (ICML)* (2023).

Lutati, S., Zimerman, I., Wolf, L. Focus Your Attention (with Adaptive IIR Filters). *Empirical Methods in Natural Language Processing (EMNLP)* (2023).

Londner, S., Phillips, Y., Miller, H. *et al.* Linguistic knowledge within handwritten text recognition models: A real-world case study. *Document Analysis and Recognition - ICDAR* (2023).

Movsowitz-Davidow, D., Manevich, Y., Toch, E., Privacy-Preserving Payment System With Verifiable Local Differential Privacy. *5th Conference on Advances in Financial Technologies (AFT)* (2023).

Nagar, D., Vladimirov, N., Farrar, CT. *et al.* Dynamic and rapid deep synthesis of chemical exchange saturation transfer and semisolid magnetization transfer MRI signals. *Scientific Reports* (2023).

Parag, K. V., & Obolski, U. Risk averse reproduction numbers improve resurgence detection. *PLOS Computational Biology* (2023).

Pickholtz, R., Kiflawi, M. *et al.* Confronting the 'nocturnal problem' on coral reefs: sleeping habitat utilization and cocoon formation in parrotfishes. *Coral Reefs* (2023).

Pras, A., Mamane, H. Nowcasting of fecal coliform presence using an artificial neural network. *Environmental Pollution* (2023).

Razin, N., Verbin, T., Cohen N. On the Ability of Graph Neural Networks to Model Interactions Between Vertices. *Conference on Neural Information Processing Systems (NeurIPS)* (2023).

Rivlin, M., Navo, G., Perlman, O., Metabolic brain imaging with glucosamine CEST MRI: in vivo characterization and first insights. *Scientific Reports* (2023).

Rosenman, G., Malkiel, I., Greental, A. *et al.* Pre-Training Transformers for Fingerprinting to Improve Stress Prediction in fMRI. *Medical Imaging with Deep Learning (MIDL)* (2023).

Rotman, M., Dekel, A., Ber, R. *et al.* Semi-supervised Learning of Partial Differential Operators and Dynamical Flows. *Uncertainty in Artificial Intelligence (UAI)* (2023).

Rotman, M., Wolf, L. Energy Regularized RNNs for Solving Non-Stationary Bandit Problems. *International Conference on Acoustics, Speech, and Signal Processing (ICASSP)* (2023).

Schliserman, M., Koren, T. Tight Risk Bounds for Gradient Descent on Separable Data. *Advances in Neural Information Processing Systems* (2023).

Schwartz, I., Snaebjarnarson, V., Benaim, S. *et al.* Discriminative Class Tokens for Text-to-Image Diffusion Models. *IEEE International Conference on Computer Vision (ICCV)* (2023).

Shaharabany, T., Dahan, A., Giryes, R. *et al.* AutoSAM: Adapting SAM to Medical Images by Overloading the Prompt Encoder. *The British Machine Vision Conference (BMVC)* (2023).

Shaharabany, T., Wolf, L. Learning a Weight Map for Weakly-Supervised Localization. *International Conference on Acoustics, Speech, and Signal Processing (ICASSP)* (2023).

Shaharabany, T., Wolf, L. Similarity Maps for Self-Training Weakly-Supervised Phrase Grounding. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)* (2023).

Sheffi, E., Rotman, M., Wolf, L. Gradient Adjusting Networks for Domain Inversion. *Scandinavian Conference on Image Analysis (SCIA)* (2023).

Sherman, U., Koren, T., Mansour, Y. Improved Regret for Efficient Online Reinforcement Learning with Linear Function Approximation. *International Conference on Machine Learning* (2023).

Shpigelman, E., Hochstadt, A., Coster, D. *et al.* Clustering of clinical-echocardiographic phenotypes of covid-19 disease using machine-learning techniques. *Scientific Reports* (2023).

Yariv, G., Gat, I., Benaim, S. *et al.* Adaptation of Text-Conditioned Diffusion Models for Audio-to-Image Generation. *Annual Conference of the International Speech Communication Association (INTERSPEECH)* (2023).

Zucker, D., Gorfine, M. Revisiting the Cumulative Incidence Function with Competing Risks Data. *Journal of the Royal Statistical Society* (2023).

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