TEDDY LAZEBNIK

PERSONAL INFORMATION

Electronic Address: t.lazebnik@ucl.ac.uk
Mobile: +972-54-5524589
Marital Status: Common-law married
Citizenship: Israeli

PROFESSIONAL SUMMARY

Mathematical models and algorithms researcher (and developer) in the fields of epidemiology, medicine, economics, and information systems. Ten years of experience in software development in the industry, including six years of experience as an algorithm developer with a focus on data-driven algorithms for bio-medical tasks.

ACADEMIC EDUCATION

Ariel University 2020 - 2021
Ph.D. in Biomathematics

· Thesis about "Modeling and Numerical Calculation of Pandemic Spread and Optimal Oncology Treatment Protocols" - supervised by Dr. Svetlana Bunimovich-Mendrazitsky.

Bar-Ilan University 2017 - 2018
M.Sc. in Applied Mathematics

· Thesis about "Highly Stable Numerical Algorithm for Matrix Exponent" - supervised by Dr. Shlomo Yanetz.

Bar-Ilan University 2013 - 2016
B.Sc. in Applied Mathematics

· Final project about "Observable of Discrete-continuous Linear Time Interval Systems with Continuous Time Measurement".

ACADEMIC EMPLOYMENT

University College London, Department of Cancer Biology Sep 2021 - Current
Honorary Post-doctoral researcher (Hosted by Prof Stephan Beck)

· Developed a novel artificial genomics generator using machine learning and bio-genomic models.
· Leading research in the development of personalized medicine through data-driven algorithms.

Bar-Ilan University, Department of Computer Science Jul 2020 - Jul 2021
Research And Teaching Assistant

· Teaching the following courses: Advanced Programming 1 and Advanced Programming 2 - all Bachelor's degree.
· Academic research guidance for Master computer science students' final project.
· Developed a Mathematical model & simulation of nanoparticles-based targeted drug delivery.
· Developed a novel academic search engine from scratch to tackle local concept drift in academic search.

Bar-Ilan University, Department of Mathematics Oct 2018 - Jul 2020
Research And Teaching Assistant

- Teaching the following courses: Partial differential equations (PDE), Introduction to linear mathematical optimization, Numerical Analysis 1, and Tools for Numerical Programming for Engineering - all Bachelor's degree.
- Academic research guidance and code review for Bachelor and Master computer science students' final project.

Holon Institute of Technology, Department of Mathematics Feb 2020 - Jul 2020
Lecturer

- Teaching Deep Learning for Computer Vision (Bachelor's degree).

Holon Institute of Technology, Department of Mathematics Oct 2019 - Feb 2020
Teaching Assistant

- Teaching Numerical Analysis (Bachelor's degree).

ACADEMIC HONORS AND AWARDS

Ariel University 2022
Ph.D. student

- A prize for academic excellence with multiple high-quality publications.

Bar-Ilan University 2017
M.Sc student

- A prize for excellence in studies and research at the master's degree in the name of David Barkovski.

STUDENTS SUPERVISION

Undergraduate students

- Bar Ilan University, Chen Tal-Schachar, 2019 (Under the supervision of Prof' Gal A. Kaminka).
- Bar Ilan University, Pedro Nissan, 2017 (Under the supervision of Prof' Gal A. Kaminka).

M.Sc. students

- Bar Ilan University, Ariel Alexi, 2022 (Help to advise with Dr. Ariel Rosenfeld).
- Tel Aviv University, Liron Simon Keren, 2022 (Help to advise with Prof' Alexander Liberzon).
- University College London, Jackson Cheung, 2022 (Help to advise Under the supervision of Prof' Stephan Beck).

Ph.D. students

- Bar Ilan University, Ariel Alexi, 2023- (Help to advised with Dr. Ariel Rosenfeld).

TEACHING COURSING

Academic courses

- Bar Ilan University, Advanced Programming 2.
- Bar Ilan University, Advanced Programming 1.
- Bar Ilan University, Numerical Analysis (X2).
- Bar Ilan University, Introduction to Linear Mathematical Optimization and Tools for Numerical Analysis for Engineers.
- Holon Institute of Technology, Deep Learning for Computer Vision tasks.
- Holon Institute of Technology, Numerical Analysis.
- Bar Ilan University, Introduction to Linear Mathematical Optimization.
- Bar Ilan University, Partial Differential Equations.

Industry courses

- Naya College, Data Science (420 hours course): Introduction to Programming in Python, Data Analysis, Introduction to Machine Learning, Introduction to Deep Learning, and Introduction to MLOps (X2).
- Y-Data, Introduction to Machine Learning.

LIST OF PUBLICATIONS

Articles in Refereed Journals

1. L. Shami, **T. Lazebnik**, Economic Aspects of the Detection of New Strains in a Multi-Strain Epidemiological Mathematical Model. Chaos, Solitons & Fractals. 2022. (Accepted)
2. **T. Lazebnik**, A. Rosenfeld, FSPL: Filter and Embedding Feature Selection Pipeline Meta Learning. Applied Mathematics and Computer Science. 2022. (Accepted)
3. L. Shami, **T. Lazebnik**, Financing and Managing Epidemiological-Economic Crisis: The Reserve Model. IMF Economic Review. 2022. (Accepted)
4. **T. Lazebnik**, U. Itai, Bounding Pandemic Spread By Heat Spread. Open Access Library Journal. 2022.
5. **T. Lazebnik**, Cell-level Spatio-Temporal Model for Bacillus Calmette-Guerin Based Immunotherapy Treatment Protocol of Superficial Bladder Cancer. Cells. 2022.
6. T. Gargantini, M. Daly, J. Sherlock, **T. Lazebnik**. Providing Safe Space for Honest Mistakes in the Public Sector Is The Most Important Predictor For Work Engagement After Strategic Clarity. Sustainability. 2022.
7. **T. Lazebnik**, Z. Bahouth, S. Bunimovich-Mendrazitsky, S. Halachmi, Predicting Acute Kidney Injury Following Open Partial Nephrectomy Treatment Using SAT-Pruned Explainable Machine Learning Model. BMC Medical Informatics and Decision Making. 2022.
8. **T. Lazebnik**, S. Bunimovich-Mendrazitsky, Generic Approach For Mathematical Model of Multi-Strain Pandemics. Plus One. 2022.
9. S. Natan, **T. Lazebnik**, E. Lerner, A distinction of three online learning pedagogic paradigms. SN Social Science. 2022.
10. Z. Zemah-Shamir, S. Zemah-Shamir, A. Scheinin, D. Tchernov, **T. Lazebnik**, G. Gal, A review of the behavioural changes and physiological adjustments of elasmobranchs and teleost's to ocean acidification with a focus on sharks. Fishes. 2022.
11. **T. Lazebnik**, G. Blumrosen, Advanced Muti-Mutation with Intervention Policies Pandemic Model. IEEE Access. 2022.
12. E. Savchenko, **T. Lazebnik**, Computer Aided Functional Style Identification and Correction In Modern Russian Texts. Journal of Data, Information and Management. 2022.
13. **T. Lazebnik**, A. Alexi, Comparison of Pandemic Intervention Policies in Several Building Types Using Heterogeneous Population Model. Communications in Nonlinear Science and Numerical Simulation. 2022.
14. **T. Lazebnik**, L. Shami, S. Bunimovich-Mendrazitsky, Pandemic Management by a Spatio-temporal Mathematical Model. International Journal of Nonlinear Sciences and Numerical Simulation. 2021.
15. **T. Lazebnik**, S. Bunimovich-Mendrazitsky, L. Shaikhet, Novel Method to Analytically Obtain the Asymptotic Stable Equilibria States of Extended SIR-type Epidemiological Models. Symmetry. 2021.
16. **T. Lazebnik**, L. Shami, S. Bunimovich-Mendrazitsky, Spatio-Temporal Influence of Non-Pharmaceutical Interventions Policies on Pandemic Dynamics and the Economy: The Case of COVID-19. Economic Research-Ekonomska Istraživanja. 2021.

17. **T. Lazebnik**, S. Bunimovich-Mendrazitsky, The signature features of COVID-19 pandemic in a hybrid mathematical model - implications for optimal work-school lockdown policy. Advanced Theory and Simulations. 2021.
18. **T. Lazebnik**, S. Bunimovich-Mendrazitsky, N. Aaroni, PDE based geometry model for BCG immunotherapy of bladder cancer. Biosystems. 2020.
19. **T. Lazebnik**, S. Yantez, S. Bunimovich-Mendrazitsky, N. Aaroni, Treatment of Bladder Cancer Using BCG Immunotherapy: PDE Modeling. Functional Differential Equations. 2019.
20. **T. Lazebnik**, S. Yantez, A Stable Algorithm for Numerical Matrix Exponent. Functional Differential Equations. 2017.

Articles in Refereed Conferences

1. **T. Lazebnik**, A. Somech, Demonstrating SubStrat: A Subset-Based Strategy for Faster AutoML on Large Datasets. CIKM. 2022. (Accapted)
2. **T. Lazebnik**, S. Bunimovich-Mendrazitsky, Improved Geometric Configuration for the Bladder Cancer BCG-based Immunotherapy Treatment Model. ISMCO. 2021.

Manuscripts Submitted / Under Review

1. **T. Lazebnik**, S. Bunimovich-Mendrazitsky, A. Rosenfeld, An Algorithm to Optimize Explainability using Feature Ensembles.
2. **T. Lazebnik**, S. Bunimovich-Mendrazitsky, Decision Tree Post-Pruning Without Loss Of Accuracy using the SAT-PP algorithm with an Empirical Evaluation on Clinical Data.
3. **T. Lazebnik**, S. Bunimovich-Mendrazitsky, More Numerically Accurate Algorithm For Matrix Exponential.
4. **T. Lazebnik**, H. Weitman, Y. Goldberg, G. A. Kaminka, Rivendell: Project-Based Academic Search Engine.
5. **T. Lazebnik**, L. Shami, S. Bunimovich-Mendrazitsky, Optimal Border Closure Policy and Tourism Flows During Epidemiological-Economic Crises: An Artificial Intelligence Approach.
6. **T. Lazebnik**, L. Shami, S. Bunimovich-Mendrazitsky, Intervention Policy Influence on the Effect of Epidemiological Crisis on Industry-Level Production Through Input-Output Networks.
7. **T. Lazebnik**, S. Bunimovich-Mendrazitsky, A. Kiselyov, Mathematical Model for BCG-based Treatment Of Type 1 Diabetes.
8. A. Alexi, **T. Lazebnik**, L. Shami, Micro-Founded Tax Revenue Forecast Model In a Supply-Demand Based Economy with Heterogeneous Population.
9. **T. Lazebnik**, A. Rosenfeld, A New Definition For Feature Selection Stability Analysis.
10. **T. Lazebnik**, A. Somech, A. Itzhak-Weinberg, SubStrat: Faster AutoML with Measure-Preserving Data Subsets.
11. L. Shami, **T. Lazebnik**, A Better Estimation and Prediction of the Non-Observed Economy in Israel.
12. **T. Lazebnik**, A. Alexi, High Resolution Mathematical Model for Airborne Pandemic Spread Indoors.
13. N. Cohen, **T. Lazebnik**, Agent-Based Simulation of Street-Level Bureaucrats' Prosocial Tendencies in the Traditional, NPM, and Post-NPM Approaches to Public Administration.
14. L. Shami, **T. Lazebnik**, O. Akirev, Analysis of the Optimal Number of Ministers: The Case of Israel.

15. **T. Lazebnik**, Computational Applications of Extended SIR Models: A Review Focused on Airborne Pandemics.
16. N. Cohen, **T. Lazebnik**, Trust and Street-Level Bureaucrats' Willingness to Risk Their Lives for Others: The Case of Brazilian Law Enforcement.
17. D. Krongauz, **T. Lazebnik**, Collective Evolution Learning Model for Vision-Based Collective Motion with Collision Avoidance.
18. **T. Lazebnik**, S. Bunimovich-Mendrazitsky, S. Ashkenazi, A. Benis, Early Detection And Control of the Next Epidemic Wave using Health Communication as Implemented with COVID-19.
19. Y. A. Veturi, W. Woof, **T. Lazebnik**, I. Moghul, P. Woodward-Court, S. K. Wagner, T. A. C. de Guimarães, M. D. Varela, B. Liefers, S. Beck, A. R. Webster, O. Mahroo, P. A. Keane, M. Michaelides, K. Balaskas, N. Pontikos, SynthEye: Investigating the impact of synthetic data on AI-assisted gene diagnosis of Inherited Retinal Disease.
20. A. Alexi, A. Rosenfeld, **T. Lazebnik**, A Security Games Inspired Approach for Distributed Controlling Of Pandemic Spread.
21. **T. Lazebnik**, S. Beck, L. Shami, Academic Collaboration is a Risky Game.
22. **T. Lazebnik**, H. Weitman, G. A. Kaminka, Graph-Based Pharmacokinetics-Pharmadynamics Modeling for Large Scale Systems: Nanoparticles Case.
23. **T. Lazebnik**, H. Weitman, G. A. Kaminka, Generic Purpose Pharmacokinetics-Pharmacodynamics Mathematical Model For Nanomedicine Targeted Drug Delivery: Mouse Model.
24. L. Simon Kere, A. Liberson, **T. Lazebnik**, SciMED: A Computational Framework For Physics-Informed Symbolic Regression with Scientist-In-The-Loop.
25. N. Vardi, **T. Lazebnik**, The Causal Role of Lockdowns in COVID-19: Conclusions from Daily Epidemiological, Psychological, and Sociological Data.
26. A. Alexi, A. Rosenfeld, **T. Lazebnik**, The Trade-off Between Airborne Pandemic Control and Energy Consumption Using Air-Ventilation Solutions.

Editorial work

1. **Journal:** Cells. **Position:** Guest editor of a special issue entitled "Cell-Cell Interaction Modelling of Cancer Immunotherapy Treatments", 1.2022-23.

Conference Talks

1. **Subject: Lazebnik, T.** and Bunimovich-Mendrazitsky, S., Mathematical Model for the BCG-based Treatment of Type 1 Diabetes.
   Conference: Dynamical Systems Applied To Biology And Natural Science, 02.2022.
2. **Subject:** Shami, L. and **Lazebnik, T.**, Financing and Managing Epidemiological-Economic Crisis: The Reserve Model.
   Conference: ICEA, Public Policy Lessons conference, 11.2021.
3. **Subject: Lazebnik, T.**, Shami, L., and Bunimovich-Mendrazitsky, S., Epidemiological-Economical Pandemic Management By A Spatio-Temporal Mathematical Model.
   Conference: Dynamical Systems Applied To Biology And Natural Science, 02.2021.

Invited Talks (Chosen)

1. **Subject:** Simulating Complex Socioeconomic Dynamics Using the Agent-based Approach.
   Location: Reichman University, Environmental Science Institute's Faculty Seminar, 1.2022.
2. **Subject:** Optimizing Explainability Using Feature Selection With Iterative Ensembles Intersections.
   Location: Holon Institute of Technology, Computer Science Faculty Seminar, 11.2021.

3. **Subject:** Pandemic Management with Economic Outcomes.
   Location: Tel Aviv University, Mathematics Faculty Seminar, 10.2021.
4. **Subject:** Influence of Non-Pharmaceutical Interventions Policies on Pandemic Dynamics from Economic Prospective.
   Location: Western Galilee College, Economics Faculty Seminar, 6.2021.

LANGUAGES

- **Hebrew:** Native.
- **Russian:** Native.
- **English:** Full professional proficiency.