TEDDY LAZEBNIK

PERSONAL INFORMATION

Electronic Address: lazebnik.teddy@gmail.com , t.lazebnik@ucl.ac.uk
Mobile: +972545524589
Marital Status: Married
Citizenship: Israeli

PROFESSIONAL SUMMARY

Mathematical models and algorithms researcher and developer in the fields of epidemiology, medicine, economics, and information systems. More than a decade of experience in software development in the industry, including seven 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 (Bio)mathematics

· 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

Reichman University, Department of Computer Science Feb 2023 - July 2023
Lecturer

· Lecturing Operation Systems (Bachelor's degree).

Bar Ilan University, Department of Information Science and Department of Management Feb 2023 - July 2023
Lecturer

· Lecturing Business Intelligence (Bachelor's degree).
· Lecturing Back-end Development (Bachelor's degree).

Holon Institute of Technology, Department of Computer Science Feb 2023 - July 2023
Lecturer

· Lecturing "Introduction To Cybersecurity" (Bachelor's degree).
· Lecturing "The Mathematical Asspecpts of Cybersecurity" (Master's degree) - my own course.

University College London, Department of Cancer Biology Sep 2021 - Aug 2023
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, 2018-2019 (Under the supervision of Prof' Gal A. Kaminka).
· Bar Ilan University, Pedro Nissan, 2017-2017 (Under the supervision of Prof' Gal A. Kaminka).

M.Sc. students

· Bar Ilan University, Ariel Alexi, 2021-2022 (Help to advise with Dr. Ariel Rosenfeld).
· Tel Aviv University, Liron Simon Keren, 2021-2022 (Help to advise with Prof' Alexander Liberzon).
· University College London, Jackson Cheung, 2022 (Help to advise under the supervision of Prof' Stephan Beck).
· Ariel University, Yonatan Herskowitz, 2022-2023 (Help to advise with Dr. Svetlana Bunimovich-Mendrazitsky).

TEACHING COURSING

Academic courses

· Reichman University, Operation Systems.
· Holon Institute of Technology, Mathematical aspects in cybersecurity.
· Holon Institute of Technology, Introduction to cybersecurity.
· Bar Ilan University, Back-end development.
· Bar Ilan University, Business Intelligence.
· 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. **T. Lazebnik**, L. Shami, S. Bunimovich-Mendrazitsky, Hybrid Mathematical Model for Optimal Border Closure Policy during Pandemic. International Journal of Applied Mathematics and Computer Science. 2023. (Accepted) - Q: 2 - Applied mathematics, Computer science, engineering — IF: 2.157

2. **T. Lazebnik**, S. Bunimovich-Mendrazitsky, A. Rosenfeld, An Algorithm to Optimize Explainability using Feature Ensembles. Applied Intelligence. 2023. (Accepted) - Q: 2 - AI — IF: 5.019

3. **T. Lazebnik**, Data-driven Hospitals Staff And Resources Allocation Using Agent-Based Simulation and Deep Reinforcement Learning. Engineering Applications of Artificial Intelligence. 2023. - Q: 1- Artificial Intelligence, Control and systems engineering, Electrical and electronic engineering — IF: 8.00.

4. **T. Lazebnik**, L. Simon-Keren, Cancer-inspired Genomics Mapper Model for the Generation of Synthetic DNA Sequences with Desired Genomics Signatures. 2023. - Q: 1 - Health information, Computer science applications — IF: 7.7.

5. A. Alexi, A. Rosenfeld, **T. Lazebnik**, Multi-Species Prey-Predator Dynamics During a Multi-Strain Pandemic. Chaos: An Interdisciplinary Journal of Nonlinear. 2023. - Q: 1 - Mathematical physics, Physics and astronomy, 2 - Applied mathematics, Medicine, Statistical and nonlinear physics — IF: 3.741.

6. N. Vardi, **T. Lazebnik**, The Causal Role of Lockdowns in COVID-19: Conclusions from Daily Epidemiological, Psychological, and Sociological Data. Psychiatric Quarterly. 2023. - Q: 1 - Psychiatry and mental health — IF: 3.5

7. **T. Lazebnik**, Computational Applications of Extended SIR Models: A Review Focused on Airborne Pandemics. 2023. Ecological Modelling. - Q: 1 - Ecology, 2 - Ecological Modeling — IF: 3.512

8. **T. Lazebnik**, S. Bunimovich-Mendrazitsky, A. Kiselyov, Mathematical Model for BCG-based Treatment Of Type 1 Diabetes. Physica A: Statistical Mechanics and its Applications. 2023. - Q: 2 - Condensed Matter Physics, Statistical and Nonlinear Physics, Statistics and Probability — IF: 3.778

9. Y.Herskowitz, S. Bunimovich-Mendrazitsky, **T. Lazebnik**, Mathematical Model Of Coffee Tree's Rast Control Using Snails As Biological Agents. Biosystems. 2023. - Q: 2 - Applied Mathematics, Modeling and Simulations — IF: 1.957

10. D. Krongauz, **T. Lazebnik**, Collective Evolution Learning Model for Vision-Based Collective Motion with Collision Avoidance. Plos One. 2023. - Q: 1 - Multidisciplinary — IF: 3.752

11. A. Alexi, **T. Lazebnik**, L. Shami, Micro-Founded Tax Revenue Forecast Model In a Supply-Demand Based Economy with Heterogeneous Population. Computational Economics. 2023. - Q: 2 - Economics, Econometrics and Finance, 3 - Computer Science Applications — IF: 1.741

12. **T. Lazebnik**, A. Rosenfeld, FSPL: Filter and Embedding Feature Selection Pipeline Meta Learning. Applied Mathematics and Computer Science. 2023. - Q: 2 - Applied Mathematics, Computer Science, Engineering — IF: 2.157

13. **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. Data & Knowledge Engineering. 2023. - Q: 2 - information systems and management — IF: 1.500

14. **T. Lazebnik**, L. Shami, S. Bunimovich-Mendrazitsky, Intervention Policy Influence on the Effect of Epidemiological Crisis on Industry-Level Production Through Input-Output Networks. Socio-Economic Planning Sciences. 2023. - Q: 1 - Economics and Econometrics, Statistics, probability and uncertainty, strategy and management — IF: 4.641

15. A. Yaniv-Rosenfeld, E. Savchenko, A. Rosenfeld, **T. Lazebnik**, Personalized Scheduling of BCG Injection Treatment for Bladder Cancer Patients. Mathematics. 2023. - Q: 2 - Computer science, engineering, mathematics — IF: 2.592

16. L. Shami, **T. Lazebnik**, Implementing Machine Learning Methods in Estimating the Size of the Non-Observed Economy. Computational Economics. 2023. - Q: 2 - Economics, econometrics and finance, 3 - Computer Science Applications — IF: 1.741

17. L. Shami, **T. Lazebnik**, Financing and managing epidemiological-economic crises: Are we ready for another outbreak?. Journal of Policy Modeling. 2023. - Q: 2 - Economics and econometrics — IF: 2.727

18. **T. Lazebnik**, A. Somech, A. Itzhak-Weinberg, SubStrat: Faster AutoML with Measure-Preserving Data Subsets. International Conference on Very Large Data Bases (VLDP). 2023. - IF: 4.243

19. L. Simon-Keren, A. Liberson, **T. Lazebnik**, A Computational Framework For Physics-Informed Symbolic Regression with Straightforward Integration of Domain Knowledge. Scientific Reports. 2023. - Q: 1 - Multidisciplinary — IF: 4.997

20. **T. Lazebnik**, A. Alexi, High Resolution Mathematical Model for Airborne Pandemic Spread Indoors. Mathematics. 2023. - Q: 2 - Computer science, engineering, mathematics — IF: 2.592

21. **T. Lazebnik**, U. Itai, Bounding Pandemic Spread By Heat Spread. Journal of Engineering Mathematics. 2023. - Q: 2 - Engineering, 3 - Mathematics — IF: 1.444

22. A. Alexi, A. Rosenfeld, **T. Lazebnik**, A Security Games Inspired Approach for Distributed Controlling Of Pandemic Spread. Advanced Theory and Simulations. 2022. - Q: 1 - Modeling and simulations, multidisciplinary, numerical analysis, 2 - Statistics and Probability — IF: 4.105

23. **T. Lazebnik**, S. Bunimovich-Mendrazitsky, S. Ashkenazi, E. Levner, A. Benis, Early Detection and Control of the Next Epidemic Wave using Health Communications: Development of an Artificial Intelligence-based Tool and its Validation on COVID-19 Data from the US. International Journal

of Environmental Research and Public Health. 2022. - Q: 2 - Pollution, Health toxicology and mutagenesis, public health — IF: 4.614

24. 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. Ophthalmology Science. 2022. - IF: NA

25. A. Alexi, A. Rosenfeld, **T. Lazebnik**, The Trade-off Between Airborne Pandemic Control and Energy Consumption Using Air-Ventilation Solutions. Sensors. 2022. - Q: 1 - Analytical chemistry, instrumentation, 2 - atomic and molecular physics and optics, biochemistry, electrical and electronic engineering, medicine — IF: 3.847

26. L. Shami, **T. Lazebnik**, Economic Aspects of the Detection of New Strains in a Multi-Strain Epidemiological Mathematical Model. Chaos, Solitons & Fractals. 2022. - Q: 1 - Applied mathematics, mathematical physics, mathematics, physics and astronomy, statistical and nonlinear physics — IF: 9.922

27. **T. Lazebnik**, Cell-level Spatio-Temporal Model for Bacillus Calmette-Guerin Based Immunotherapy Treatment Protocol of Superficial Bladder Cancer. Cells. 2022. - Q: 1 - Biochemistry, Genetics and Molecular Biology — IF = 7.666

28. 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. - Q: 1 - Geography planning and development, 2 - computer networks and communications, energy engineering and power technology, environmental science — IF = 3.889

29. **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.- Q: 1 -Health policy, 2 - Computer science, health informatics — IF = 3.298

30. **T. Lazebnik**, S. Bunimovich-Mendrazitsky, Generic Approach For Mathematical Model of Multi-Strain Pandemics. Plos One. 2022. - Q: 1 - Multidisciplinary — IF: 3.752

31. S. Natan, **T. Lazebnik**, E. Lerner, A distinction of three online learning pedagogic paradigms. SN Social Science. 2022. - NA

32. 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. - Q: 2 - Aquatic science, ecology, ecology evolution behaviour and systematics — IF: 3.170

33. **T. Lazebnik**, G. Blumrosen, Advanced Muti-Mutation with Intervention Policies Pandemic Model. IEEE Access. 2022. - Q: 1 - Computer science, engineering, materials science — IF: 3.476

34. E. Savchenko, **T. Lazebnik**, Computer Aided Functional Style Identification and Correction In Modern Russian Texts. Journal of Data, Information and Management. 2022. - NA

35. **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. - Q: 1 - applied mathematics, modelling and simulation, numerical analysis — IF: 4.186

36. **T. Lazebnik**, L. Shami, S. Bunimovich-Mendrazitsky, Pandemic Management by a Spatio-temporal Mathematical Model. International Journal of Nonlinear Sciences and Numerical Simulation. 2021. - Q: 2 - computation mechanics, engineering, 3 - applied mathematics, modeling and simulations, statistical and nonlinear physics — IF: 2.156

37. **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. - Q: 2 - chemistry, computer science, mathematics, physics and astronomy — IF: 2.940

38. **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 Istrazivanja. 2021. - Q: 2 - economics and econometrics — IF: 3.080

39. **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. - Q: 1 - Modeling and simulations, multidisciplinary, numerical analysis, 2 - Statistics and Probability — IF: 4.105

40. **T. Lazebnik**, S. Bunimovich-Mendrazitsky, N. Aaroni, PDE based geometry model for BCG immunotherapy of bladder cancer. Biosystems. 2020. - Q: 2 - Applied Mathematics, Modeling and Simulations — IF: 1.957

Articles in Refereed Conferences

1. **T. Lazebnik**, A. Somech, Demonstrating SubStrat: A Subset-Based Strategy for Faster AutoML on Large Datasets. Conference on Information and Knowledge Management (CIKM). 2022.

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, More Numerically Accurate Algorithm For Matrix Exponential.

2. **T. Lazebnik**, H. Weitman, Y. Goldberg, G. A. Kaminka, Rivendell: Project-Based Academic Search Engine.

3. **T. Lazebnik**, A. Rosenfeld, A New Definition For Feature Selection Stability Analysis.

4. N. Cohen, **T. Lazebnik**, Agent-Based Simulation of Street-Level Bureaucrats' Prosocial Tendencies in the Traditional, NPM, and Post-NPM Approaches to Public Administration.

5. L. Shami, **T. Lazebnik**, O. Akirev, Analysis of the Optimal Number of Ministers: The Case of Israel.

6. N. Cohen, **T. Lazebnik**, Trust and Street-Level Bureaucrats' Willingness to Risk Their Lives for Others: The Case of Brazilian Law Enforcement.

7. **T. Lazebnik**, S. Beck, L. Shami, Academic Collaboration is a Risky Game.

8. **T. Lazebnik**, Cost-optimal Seeding Strategy During a Botanical Pandemic in Domesticated Fields.

9. L. Simon-keren, **T. Lazebnik**, A. Liberzon, Improved Prediction of Settling Behaviour of Solid Particles through Machine Learning Analysis of Experimental Retention Time Data.

10. **T. Lazebnik**, S. Bunimovich-Mendrazitsky, Predicting the location of metastates of lung cancer using the location of the original location.

11. **T. Lazebnik**, A. Rosenfeld, How Academic Collaborations Influence Authors' Writing Style.

12. **T. Lazebnik**, L. Simon-Keren, Knowledge-integrated AutoEncoder Model.

13. **T. Lazebnik**, L. Shami, A. Alexi, A. Rosenfeld, Economical-Epidemiological Analysis of the Coffee Trees Rust Pandemic.

14. N. Cohen, M. Davidovich, **T. Lazebnik**, Trust and Street-Level Bureaucrats' Perceptions about Organizational Readiness for Emergencies.

15. **T. Lazebnik**, The Family Tree Graph as a Predictor of the Family Members' Satisfaction with One Another.
16. **T. Lazebnik**, T. Fleischer, A. Yaniv-Rosenfeld, Benchmarking Biologically-inspired Automatic Machine Learning for Economic Tasks.
17. N. Vardi, **T. Lazebnik**, M. Bar, Using Machine Learning to Evaluate Ruminative Thinking From Associative Responses.
18. L. Shami, **T. Lazebnik**, Nash and Trading Equilibria in a Public Good Economy with Finite Number of Private and Public Goods and Asymmetrical Agents.
19. **T. Lazebnik**, D. Gorlitsky, Can we spot possible lies in research papers? the case of economic papers.
20. **T. Lazebnik**, O. Iny, Temporal Graphs Anomaly Emergence Detection: Benchmarking For Social Media Interactions.
21. G. Dinu, **T. Lazebnik**, A. Rosenfeld, M. Mincu, O. Oren, I. Nicolae, A. Zamansky, BovineTalk: Machine Learning for Vocalization Analysis of Dairy Cattle in Negative Affective States.
22. N. Farhat, **T. Lazebnik**, J. Monteny, C. Moons, E. Wydooghe, D. van der Linden, A. Zamansky, Digitally-Enhanced Dog Behavioral Testing: Getting Help from the Machine.
23. A. Yaniv-Rosenfeld, **T. Lazebnik**, A. Rosenfeld, M. Netzer, A. Elalouf, U. Nitzan, Socio-Demographic Predictors of Hospitalization Duration of Patients with Borderline Personality Disorder: A Retrospective Study.

Grants received

1. "Implementation of artificial intelligence methods to improve early detection of disease outbreaks, public responses, prevention and management", 15000 NIS - received 4000 NIS.
2. "Impact of climate change on ecosystem services in the Gulf of Eilat - Environmental-economic assessment", 449880 NIS - received 22500 NIS.

Editorial work

1. **Journal:** Cells. **Position:** Guest editor of a special issue entitled "Cell-Cell Interaction Modelling of Cancer Immunotherapy Treatments", 1.2022 - 2.2023.
2. **Journal:** Frontiers in Applied Mathematics and Statistics. **Position:** Review editor, 12.2022 - now.

Conference Talks

1. **Subject: Lazebnik, T.**, Using ML models in infectious diseases prediction with economical constraints.
   Conference: AI2 - medicine in the AI Era, 05.2023.
2. **Subject: Lazebnik, T.** and Bunimovich-Mendrazitsky, S., Extended Mathematical Model for the BCG-based Treatment of Type 1 Diabetes.
   Conference: Dynamical Systems Applied To Biology And Natural Science, 02.2023.
3. **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.
4. **Subject:** Shami, L. and **Lazebnik, T.**, Financing and Managing Epidemiological-Economic Crisis: The Reserve Model.
   Conference: ICEA, Public Policy Lessons conference, 11.2021.

5. **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.

LANGUAGES

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