

Name: Shula Shazman

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CURRICULUM VITAE

1. Personal Details

Permanent Home Address: 14 Ets Hazait, St., Binyamina 3054014, Israel.

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2. Higher Education

A. Undergraduate and Graduate Studies

Period of Study	Name of Institution and Department	Degree	Year of Approval of Degree
1989 – 1993	B.Sc. in Information Systems Engineering from Faculty of Computer Science, the Technion, Israel.	B.Sc.	1993
2005 - 2011	M.Sc. + Ph.D. (direct track) in Biological Sciences, Faculty of Biology, the Technion, Israel. Supervisor: Prof. Yael Mandel-Gutfreund. Title of thesis: Computational approaches for characterizing Protein- Nucleic-Acid Binding.	M.Sc. + Ph.D	2011

B. Post-Doctoral Studies

Period of Study	Name of Institution and Department	Degree	Year of Completion
2011 – 2015	Postdoctoral fellow, Department of Biochemistry & Molecular Biophysics, Columbia University, New-York, USA. Supervisor: Prof. Barry Honig.	Postdoct	2015

3. Academic Ranks and Tenure in Institutes of Higher Education

Dates	Name of Institution and Department	Rank/Position
1996-2011 2015- present	The Open University of Israel, Department of Mathematics and Computer Science.	Lecturer

4. Scholarly Positions and Activities outside the Institution

A. Advisory Roles

2015-2018	Machine Learning advisor. Working with prof. Stephen J. Small Department of Biology NYU NY.
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5. Participation in Scholarly Conferences

A. Active Participation

International Conferences

Date	Name of Conference	Place of Conference	Subject of Lecture/Discussion	Role
1/2008	Pacific Symposium on Biocomputing.	Kohala Coast, Hawaii, USA.	Classifying RNA-Binding Proteins Based on Electrostatic Properties.	Co author
7/2009	3DSIG: Structural Bioinformatics and Computational Biophysics.	Stockholm, Sweden.	Using a Differential Geometry Approach for Characterizing Nucleic Acids Binding Interfaces.	Presenter
7/2010	3DSIG: Structural Bioinformatics and Computational Biophysics.	Boston, USA.	Matching Algorithm for coupling Protein-RNA interfaces.	Presenter

10/2011	Invited Lecture CSHL.	Long Island NY, USA.	From face to interface recognition: a differential geometry approach to distinguish DNA from RNA binding surfaces.	Invited Lecture
12/2012	New-York Structural Biology Discussion Group.	Manhattan, NY, USA.	OnTheFly- A Database of Drosophila Melanogaster Transcription Factors (TF) and TF Binding Sites (TFBS).	Presenter
7/2012	3DSIG: Structural Bioinformatics and Computational Biophysics,	Long Beach, California.	OnTheFly- A Database of Drosophila Melanogaster Transcription Factors (TF) and TF Binding Sites.	Presenter
7/2016	3DSIG: Structural Bioinformatics and Computational Biophysics	Orlando, Florida.	Ordering The Disordered Proteins.	Presenter
10/2019	Hellenic Bioinformatics	Heraklion-Crete. Greece.	A Machine Learning Approach to select the Type of Intermittent Fasting in Order to Improve Health by Effects on Type 2 Diabetes.	Presenter
2/2020	11th International Conference on Bioinformatics models, methods and algorithms.	Valletta, Malta.	A Machine Learning Approach to select the Type of Intermittent Fasting in Order to Improve Health by Effects on Type 2 Diabetes.	Presenter
11/2021	Global Meeting on Diabetes and Endocrinology.	Dubai, UAE.	Selecting Intermittent Fasting Type to Improve Health in Type 2 Diabetes: A Machine Learning Approach	Keynote speaker

National Conferences

Date	Name of Conference	Place of Conference	Subject of Lecture/Discussion	Role
10/2006	Israeli Society for Bioinformatics and Computational Biology.	Bar-Ilan University, Tel Aviv, Israel.	Predicting RNA-binding function from structure.	Presenter
2/2007	European Conference of Computational Biology (ECCB)	Eilat	Predicting RNA-binding function from structure	Presenter
4/2008	Israeli Society for Bioinformatics and Computational Biology.	Tel Aviv University, Tel-Aviv.	Classifying RNA-Binding Proteins Based on Electrostatic Properties.	Presenter
4/2009	Israeli Society for Bioinformatics and Computational Biology.	Weizmann Institute, Rehovot.	Using a Differential Geometry Approach for Characterizing Biological Relevant Interfaces.	Presenter
4/2010	Israeli Society for Bioinformatics and Computational Biology.	The Technion, Haifa.	Matching Algorithm for coupling Protein-RNA interfaces.	Presenter
2/2014	7th FISEB (ILANIT)	Eilat.	OnTheFly database – structural basis to study TF's DNA binding specificity.	Presenter
10/2015	CECAM Workshop: Computational Modeling of Gene	Tel Aviv University, Tel-Aviv.	Predicting Protein-DNA Interactions Using Geometric Docking - Can DNA Specificity Improve Results?	Presenter

	Expression and its Evolution			
4/2018	Israeli Society for Bioinformatics and Computational Biology	Weizmann Institute, Rehovot.	The embryo as a learning machine: DNA sequence-based rules for anterior-posterior boundary formation in Drosophila.	Presenter
11/2019	Symposium: Inventions and Innovations: Medicine 2040.	Tel-Aviv, Israel.	A Machine Learning Approach to select the Type of Intermittent Fasting in Order to Improve Health by Effects on Type 2 Diabetes.	Presenter
3/2020	Azrieli Workshop, Common Mechanisms in Alzheimer's Disease and Type 2 Diabetes. Bar-Ilan University. The Azrieli Faculty of Medicine.	Bar-Ilan University. The Azrieli Faculty of Medicine. Zefad, Israel.	A Machine Learning Approach to select the Type of Intermittent Fasting in Order to Improve Health by Effects on Type 2 Diabetes .	Presenter
1/2022	The First International Israel Data Science Initiative Conference	Ein-Gedi, Israel.	Classifying Autism Spectrum Disorder (ASD) causal genes based on Intrinsic Disordered Regions. Selecting Intermittent Fasting Type to Improve Health in Type 2 Diabetes: A Machine Learning Approach.	Presenter of two separate lecturers.
2/2022	The Israeli Meeting for Autism Research (I-MAR)	Ben-Gurion University of the Negev.	Classifying Autism Spectrum Disorder (ASD) causal genes based on Intrinsic Disordered Regions.	Presenter

6. Invited Lectures

Date	Place of Lecture	Name of Forum	Presentation/Comments
10/2011		Long Island NY, USA. Invited Lecture Cold Spring Harbor Laboratories.	From face to interface recognition: a differential geometry approach to distinguish DNA from RNA binding surfaces.
11/2023	University of Tel Aviv, Tel Aviv, Israel	2nd Global Meeting on Diabetes and Endocrinology.	A recommendation system for selecting intermittent fasting method to improve health in type 2 diabetes.

7. Scholarships, Awards and Prizes

Date	Source	Purpose
2009	The faculty of Biology, The Technion. Israel.	Excellence scholarship.
2009	Katzir-Katchalsky Student Travel Fellowships. Weizmann, Rehovot, Israel.	The Katzir Travel Fellowship.
2009	'Runner-Up Award', Stockholm, Sweden.	The Best Scientific Contribution Award.
2010	the Irwin and Joan Jacobs fellowship', the Technion, Israel.	Excellence scholarship.
2010	IBS. Technion, Israel.	Best Poster Award.

8. Teaching

A. Courses Taught in Recent Years

Year	Name of Course	Type of Course	Degree	Number of Students
1996-present	Principals of Information Systems' development	Lecturer / Mandatory	BA	20-30
2004-present	Introduction to Computer Science using Java.	Lecturer / Mandatory	BA	30-60
2020-present	Advance programming in Java.	Lecturer	BA	30-60
2007-2010	Introduction to Bioinformatics	Teaching Assistant / Mandatory	BA	30-60
2015-2017	Introduction to Artificial Intelligence	Lecturer	BA/MA	20-30
2009-present	Data Mining	Lecturer	BA/MA	20-30
2019-present	Object Oriented Programming	Lecturer	BA/MA	20-30
2018-2020	Biological Computability.	Lecturer	BA/MA	20-30

9. Professional Experience

Date	company / activities
1994-1996	Programmer in Software Development Group, "Telrad", Lod, Israel.
1996-1998	Programmer in the Information System Development Group, Amigar Information Systems, Israel. Developing using Oracle database and with SQL.

1998-2000	Information System Analyst in the Information System Department, Rambam Hospital, Haifa, Israel.
2015-2018	Machines Learning adviser for a project at NYU university NY.

PUBLICATIONS

A. Ph.D. Dissertation

Shazman S. (2011). Computational approaches for characterizing Protein- Nucleic-Acid Binding. Faculty of Biology, the Technion, Israel. Supervisor: Prof. Yael Mandel-Gutfreund.

B. Authored Books – Published

1. **Shazman S.** and Shifroni E. (2000). Object Oriented Programming in JAVA language, Tel-Aviv, Israel: The Open University press. (526 p., in Hebrew).
2. **Shazman S.**, Mordian N. and Rozner E. (2002). Introduction to Science and Information Technologies - Part A, Tel-Aviv, Israel: The Centre for Educational Technology press, (248 p., in Hebrew).
3. **Shazman S.**, Hotovli R. and Selpak A. (2004). Introduction to Operations Research, Tel-Aviv, Israel: The Centre for Educational Technology press, (363 p., in Hebrew).
4. **Shazman S.** (2021) Full chapter "SELECTING INTERMITTENT FASTING TYPE TO IMPROVE HEALTH IN TYPE 2 DIABETES: A MACHINE LEARNING APPROACH" published in the book under the working title "Type 2 Diabetes", ISBN 978-1-83881-904-0. <https://www.intechopen.com/chapters/74586>.

C. Articles in Refereed Journals

Note: Relative contributions are according to the order of names

Published

1. **Shazman S**, Celniker G, Haber O, Glaser F, Mandel-Gutfreund Y. (2007) Patch Finder Plus (PFplus): A web server for extracting and displaying positive electrostatic patches on protein surfaces. Nucleic Acids Res 35(Web Server issue): W526-30. doi: 10.1093/nar/gkm401. (Impact factor: 16.971; Genetics (Q1); 58 citations).
2. **Shazman S**, Mandel-Gutfreund Y. (2008) Classifying RNA-binding proteins based on electrostatic properties. PLoS Comput Biol 4(8): e1000146. <https://doi.org/10.1371/journal.pcbi.1000146>. (Impact factor: 4.8 ; Cellular and Molecular Neuroscience (Q1); Computational Theory and Mathematics (Q1); Ecology (Q1); Ecology, Evolution, Behavior and Systematics (Q1); Genetics (Q1); Modeling and Simulation (Q1); Molecular Biology (Q1) ; 97 citations).

3. **Shazman S**, Elber G, Mandel-Gutfreund Y. (2011) From face to interface recognition: a differential geometry approach to distinguish DNA from RNA binding surfaces. *Nucleic Acids Res* 39(17): 7390-7399. DOI: 10.1093/nar/gkr395. (Impact factor: 16.971; Genetics (Q1); 24 citations).
4. Dror I, **Shazman S**, Mukherjee S, Zhang Y, Glaser F, Mandel-Gutfreund Y. (2012) Predicting nucleic acid binding interfaces from structural models of proteins. *Proteins: Structure, Function, and Bioinformatics* 80(2): 482-489. DOI: 10.1002/prot.23214. (Impact factor: 3.76. Q is not available; 9 citations).
5. **Shazman S**, Lee H, Socol Y, Mann RS, Honig B. (2014) "OnTheFly": a database of *Drosophila melanogaster* transcription factors and their binding sites. *Nucleic Acids Res* 42(1): D167-171. doi: 10.1093/nar/gkt1165. (Impact factor: 16.971; Genetics (Q1); 24 citations).
6. **Shazman S**. "A Machine Learning Approach to select the Type of Intermittent Fasting in Order to Improve Health by Effects on Type 2 Diabetes." *Bioinformatics. Conference: 11th International Conference on Bioinformatics Models, Methods and Algorithms*. January 2020. DOI: 10.5220/0008950201310137. (Impact factor: 5.6 ; Biochemistry (Q1); Computational Mathematics (Q1); Computational Theory and Mathematics (Q1); Computer Science Applications (Q1); Molecular Biology (Q1); Statistics and Probability (Q1); 1 citation).
7. **Shazman S**. "Classifying Autism Spectrum Disorder (ASD) causal genes based on Intrinsic Disordered Regions". *The 24 World Multiconference on Systemic, Cybernetics and Informatics (WMSCI September 2020)*. ISBN - Collection: 978-1-950492-36-7. ISBN - Volume I: 978-1-950492-37-4.
8. Gozes I. and **Shazman S**. (2022). "Stop codon mutations at sites of natural caspase cleavage are implicated in autism and Alzheimer's disease: the case of ADNP. *Frontiers in Endocrinology*. doi.org/10.3389/fendo.2022.867442. (Impact factor: 5.6 ; Endocrinology, Diabetes and Metabolism (Q1)).
9. Ivashko-Pachima Y., Ganaiem M., Ben-Horin-Hazak I., Lobyntseva A., Bellaiche N., Fischer I., Levy G., Sragovich S., Karmon G., Giladi E., **Shazman S.**, Barak B and Gozes I*. STOP codon mutations at sites of natural caspase cleavage are implicated in autism and Alzheimer's disease: the case of ADNP. April 2022 accepted to *Molecular Psychiatry*. (Impact

Factor: 15.992 ; Cellular and Molecular Neuroscience (Q1); Molecular Biology (Q1); Psychiatry and Mental Health (Q1).)

10. **Shazman S.** A recommendation system for selecting intermittent fasting method to improve health in type 2 diabetes. February 2022 submitted to Bioinformatics (Impact factor: 5.6 ; Biochemistry (Q1); Computational Mathematics (Q1); Computational Theory and Mathematics (Q1); Computer Science Applications (Q1); Molecular Biology (Q1); Statistics and Probability (Q1)).

D. Articles or Chapters in Scientific Books

Published

11. **Shazman S.** (2021) Full chapter "SELECTING INTERMITTENT FASTING TYPE TO IMPROVE HEALTH IN TYPE 2 DIABETES: A MACHINE LEARNING APPROACH" published in the book under the working title "Type 2 Diabetes", ISBN 978-1-83881-904-0. <https://www.intechopen.com/chapters/74586>.

E. Summary of My Activities and Future Plans

I'm currently a lecturer and researcher in the Departments of Mathematics and Computer Science in the Open University of Israel.

I concluded my postdoctoral studies at Prof. Barry Honig's laboratory (the Department of Biochemistry and Molecular Biophysics, Columbia University, NY, USA). In collaboration with Prof. Richard Mann from Columbia University, we introduced a new database ("OnTheFly") for *Drosophila melanogaster* transcription factors and their binding sites (Shazman et al., NAR 2014). Briefly, this database integrates, in one location, both structural (protein) and sequential (DNA) information. Such a combined database is unique and can substantially contribute to our understanding of protein-DNA recognition processes, lead to novel mechanistic conclusions and suggest new candidates for experimental procedures and drug designs .

During my PhD I became an expert of Data Mining and Machines Learning algorithms using support vector machine. My Ph.D. thesis, under the supervision of Prof. Yael Mandel-Gutfreund from the Technion, focused on computational approaches for the study of protein-RNA interactions. I have developed a method for extracting and displaying positive electrostatic patches on the protein surface; this method, termed

PFplus (Shazman et al., NAR 2007), is applicable for identifying functional interfaces on proteins, especially nucleic acid binding interfaces. By applying PFplus and using a machine-learning approach we predicted nucleic acid-binding functions based on the electrostatic properties of the proteins. This prediction method was published in PLoS Computational Biology (Shazman and Mandel-Gutfreund, 2008) and was later validated experimentally (Eliahoo, E. et al. , NAR 2010) in collaboration with Prof. Manor from the Technion. Finally, in collaboration with prof. Gershon Elber from the Department of Computer Science in the Technion we applied the IRIT <http://www.cs.technion.ac.il/~irit/> a freeform geometric modeling environment that allows one to model general freeform surfaces'-based models as well as polygonal objects, to model molecular surfaces. The IRIT`s data after adaptation into molecular surfaces was used to distinguish DNA-binding from RNA-binding proteins. This prediction was published (Shazman S, Elber G, Mandel-Gutfreund Y. NAR 2011) and won The Best Scientific Contribution Award ('Runner-Up Award', Stockholm, 2009).

Recently I worked with prof. Stephen J. Small from NYU university NY, as a machine learning advisor. Furthermore, two of my newest publications deal with machines learning approaches : "A Machine Learning Approach to select the Type of Intermittent Fasting in Order to Improve Health by Effects on Type 2 Diabetes." (Shazman, Bioinformatics 2020) And "Classifying Autism Spectrum Disorder (ASD) causal genes based on Intrinsic Disordered Regions" (Shazman, WMSCI 2020).

I am currently seeking to lead my own research group, preferably in Max Stern Yazreel Valley College. In my research I intend to develop computational tools and machines learning methods to Machine learning and deep learning approach to reveal mechanisms of diseases .

I also consider teaching a fundamental part of research. Throughout my 29 years of academic experience, I had the privilege to teach and guide many undergraduate and graduate students, as well as learn from them myself. Thus, in addition to leading my own research, I am also looking forward to taking part in shaping the next generation of Israel`s scientists by developing new educational tools and courses in my field of expertise.