1.1.2025

Revital Marbel: CURRICULUM VITAE AND LIST OF PUBLICATIONS

Personal Details

Revital Marbel
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Education

Undergraduate and Graduate Studies

Post-Doctoral	2022 - present, Ariel University, Dr. Ran Dubin, Dr. Amit Zeev Dvir. Out of Distribution Classifiers for Cyber-Security and Anomaly Detection in Cloud Services using Graph Neural Network (GNN).
Ph.D.	2018 – 2022 – Ariel University, Computer Science Prof. Boaz Ben-Moshe, Dr. Tal Grinshpoun, Long-Range Free-Space Optical Communication Optimization (Pending approval)
M.Sc.	2016 – 2018 - Ariel University, Computer Sciennce Prof. Boaz Ben-Moshe Star Tracker algorithm for mobile applications
M.Teach	2010-2012- Beit Berel College, Master's Degree in Mathematics Teaching for Post-Elementary School
B.Sc.	2006-2009 – Ariel University – Computer Science

Professional Activities

Positions in academic administration (Departmental, Faculty and University)

2023-current: Holon Institute of Technology (HIT), Faculty Member , School of Computer Science.

2022-2023: Ariel University, Cyber Center Post-Doctoral Researcher

2022-2024: Researcher in Trust.ai academic-industry Consortium (MAGNET), on model confidence analysis and anomaly detection algorithms.
I oversaw the research conducted by Ariel University as part of an academy-industry research group funded by the Israel Innovation Authority. In this role, I coordinated collaborative projects between academia and industry, resulting in the publication of research papers, development of innovative technologies, and strong partnerships with industry startups.
2022--23: Center of Business and Law, Lecturer, Faculty Member
2017 - 2020 : Ariel University, Computer Science Department, Lecturer
2016 - 2022 : Ariel University, KC&G, Student lab member

Educational activities

Courses taught in Recent Years

2024: Introduction to Artificial Intelligent, Hit, Holon

2023-2024: Computer Networking, Hit, Holon

2023: Data Structures **(Introduction to Algorithms)** Hit, Holon

2022-2023: **Introduction to CS in python**, Center of Law and Business , Ramat Gan

2022-2023: **Intro to Data Science**, Center of Law and Business, Ramat Gan

2023: **OOP in python**, Center of Law and Business , Ramat Gan

2018 – 2021, **Introduction to CS in java**, Ariel University

2020-2021 **Data Structures** (Introduction to Algorithms) Ariel University

2019 – **Seminar for undergraduates students** ,Ariel University

Citation IndexH-index:

i10-index – 2, H-index - 6

Total number of citations of all articles: Google Scholar - 204

Total number of citations without self-citations: Google Scholar – 202

Articles

Journal Papers

1) *Star-Tracker Algorithm for Smartphones and Commercial Micro-Drones.*
Marbel, R., Ben-Moshe, B., & Yozevitch, R.
Sensors (2020).
WoS: Q2, IF:3.9
SCImago:Q1, h-index:219
[google schoolar Citation = 6]

2) *Urban Free-Space Optical Network Optimization.*
Marbel, R., Ben-Moshe, B., & Grinshpoun, T.
Applied Sciences, 10(21), 7872. (2020).
WoS: Q2, IF:2.7
SCImago:Q2, h-index:101
[google schoolar Citation = 2]

3) *Dynamic Network Formation for FSO Satellite Communication.*
Marbel, R., Yozevitch, R., Grinshpoun, T., & Ben-Moshe, B.
Applied Sciences, 12(2), 738. (2022).
WoS: Q2, IF:2.7
SCImago:Q2, h-index:101
[google schoolar Citation = 8]

4) *Pico-Sat to Ground Control: Optimizing Download Link via Laser Communication.*
Marbel, R., Ben-Moshe, B., & Grinshpoun, T.
Remote Sensing, 14(15), 3514. (2022).
WoS: Q1, IF:5
SCImago:Q1, h-index:168
[google schoolar Citation = 7]

5) *Save Our Roads from GNSS Jamming: A Crowdsource Framework for Threat Evaluation.*
R Yozevitch **, R., Marbel,** R., Flysher, N., & B. Ben-Moshe.
Sensors, 21(14), 4840. Yozevitch**,** (2021).
WoS: Q2, IF:3.9
SCImago:Q1, h-index:219
[google schoolar Citation = 3]

6) *Evaluating Indoor Positioning Systems in a Shopping Mall: The Lessons Learned From the IPIN 2018 Competition.*
IEEE Access 2019,
WoS: Q2, IF:3.9
SCImago: Q1, h-index:204

[google schoolar Citation = 96]

7) The IPIN 2019 indoor localisation competition—Description and results, 2020.
IEEE Access 2020.
WoS: Q2, IF:3.9
SCImago: Q1, h-index:204
[google schoolar Citation = 62]

8) Harnessing the power of Wav2Vec2 and CNNs for Robust Speaker Identification on the VoxCeleb and LibriSpeech Datasets.
Or Haim Anidjar, **Revital Marbel**, Roi Yozevitch
2023, Elsevier, Expert Systems With Applications
WoS: Q1, IF:8.5
SCImago:Q1, h-index:249
[google schoolar Citation = 2]

9) Extending limited datasets with GAN-like self-supervision for SMS spam detection
OH Anidjar, **R Marbel**, R Dubin, A Dvir, C Hajaj
2024, Computer and Security, Elsevier.
WoS: Q2, IF:5.6
SCImago:Q1, h-index:112

10) Crossing Language Identification: Multilingual ASR Framework Based on Semantic Dataset Creation & Wav2Vec 2.0.
O.H. Anidjar, R. Yozevitcha, N. Bigona, N. Abdallaa, B. Myaraa, **R. Marbel.**
2023, Machine learning with applications , Elsevier.

Published conference papers with peer review

1) *PQClass: Classification of Post-Quantum Encryption Applications in Internet Traffic.*
*Angelos K. Marnerides, Chen Hajaj, **Revital Marbel**, Ran Dubin, Amit Dvir.*
In IEEE ICC'25 - CISS Symposium

2) *A New D-MAGIC: Dynamic Model for Cybersecurity Attack Detection using GNNs into Clustering*
*Zohar Simhon and Matan Weiss ,Chen Hajaj , **Revital Marbel**, Ran Dubin and Amit Dvir .*
In IEEE ICC'25 - CISS Symposium

3) *Star tracker for mobile applications.*
IEEE. **Marbel, R**., Ben-Moshe, B., & Yozevitch, R.

In 2016 IEEE International Conference on the Science of Electrical Engineering (ICSEE) (2016, November).
SCImago: h-index:10
[google schoolar Citation = 6]

4) *Bio-Inspired Micro Drones.*
Ben-Moshe, B., Landau, Y., **Marbel, R**., & Mishiner, A
In 2018 IEEE International Conference on the Science of Electrical Engineering in Israel (ICSEE) (2018, December)
SCImago: h-index:6
[google schoolar Citation = 2]

5) *STEPS-indoor visual navigation framework for mobile device.*
Landau, Y., Ben-Moshe, B., & **Marbel, R.** (April, 2019).
In IPIN (Short Papers/Work-in-Progress Papers) (pp. 299-306).
SCImago: h-index:12
[google schoolar Citation = 1]

Publications Under Review

1) *Cloudy with a Chance of Anomalies: Dynamic Graph Neural Network for Early Detection of Cloud Services' User Anomalies*.
R. Marbel, Y. Cohen, R. Dubin, A. Dvir, C. Hajaj.
IEEE International Conference on Communications

2) *ETCG2vec: Encrypted Traffic Classification in Real-World Scenarios Using Graph-Based Embedding*
R. Marbel, A lichi, A. Dvir, C. Hajaj.
IEEE International Conference on Communications

3) Real-Time Network Security: Integrating ANN and Dynamic Graph-Based Clustering
Zohar Simhon, , Matan Weiss, Revital Marbel, Chen Hajaj, Amit Dvir and Ran Dubin
Computers & Security

Awards and Honors

1st Place Winner of the Microsoft Indoor Localization Competition. April,2018, Portugal,
1st Place Winner at Samsung Image-ination Hackathon. May, 2018, Israel.
Deans Honor, M.Sc in computer science, May,2017, Ariel University, Israel

Industrial Experience

2021-2022 - Data Scientist, Libonea.ai LTD

2011-2016: High-School Math Teacher, Atid High-School, Israel
2009-2011: Software Developer, Amdocs, Israel

Synopsis of research

My field of interest ranges from the theoretical field of graph optimization problems to the practical application of deep learning methods. Both aspects are integrated into my academic and industrial work. My academic research revolves around the new space field, in which the application of algorithms is integral, as having many engineering aspects. During the research, I was also a part of a team that built and launched two satellites. Later on, moving to the industry, I used machine learning methods to analyze documents and transcripts as a Data Scientist at Libonea.ai.

I started my academic journey as a fellow M.sc student at the kinematic and computational geometry (K&CG) research lab. There, I studied the field of automatic navigation using computer vision and pattern matching algorithms. During this time, I also worked on the KCG SATTLA 1 satellite project. My part in this project was to build the satellite self-orientation determination system. Finally, my Ms.c thesis presented a star tracking algorithm for mobile devices, which I also implemented as the star tracking algorithm on the satellite. In that year, I accepted the Dean's excellence award.

As a Ph.D. candidate, my study shifted to the theoretical aspect of these problems. The primary research in those years dealt with static and dynamic graph optimization from three main aspects. The first aspect dealt with forming an optimized network for urban-based free-space optic (FSO) communication, mainly for the backbone of existing wire-based infrastructure. The goal of such a network was to support an earth-satellite FSO-based communication. We used genetic algorithms to build an optimization method for finding a Steiner tree on geometric graphs in semi-real-time.

The second aspect examined optimization problems on dynamic graphs. The research goal was to build an algorithm for building an optimal network for connecting dynamic pico satellite networks (Starlink network, for example). The theoretical part of this work was finding a bounded degree minimum spanning tree for dynamic graphs.

The last part of my Ph.D. presented an end-to-end FSO-based satellite-ground station built from commercial off-the-shelf devices. Using this type of communication under such conditions is not trivial since it requires accurate tracking of a tiny satellite by the ground station.

In addition to research, I have always had a passion for teaching. During my years at the academy, I was a lecturer for undergrad students and a mentor for young high school

students in the Alpha program. These students joined the research labs at the university, and I was their mediator research supervisor. After two years in this program, I was appointed the program-CS research coordinator.

My main focus today is dynamic graph embedding using deep learning methods. This field of research is relevant for many "real-life" problems, such as cyber security, 5G network optimization, and sensorial network-based systems.