Name: Dr. Eliahu Khalastchi **Date:** 02.02.20

The Collage Management of Academic Studies

CURRICULUM VITAE

1. Personal Details

Permanent Home Address: Shazar 2 Petah Tiqwa

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Marital Status: Happily Married

2. Higher Education

A. Undergraduate and Graduate Studies

BSc. In Computer Science, Bar-Ilan University (2005-2008).
MSc. In Computer Science, Artificial Intelligence, Robotics, Bar-Ilan University (2008-2010). summa cum laude.
Thesis Title: Anomaly Detection in Unmanned Vehicles.
Advisor: Prof. Gal A. Kaminka

B. Doctoral Degree and Post-Doctoral Studies

Ph.D In Information System Engineering, Artificial Intelligence, Robotics,
Ben-Gurion University of the Negev (2011-2015).
Dissertation: Model-based Diagnosis for robotic Systems
Advisors: Prof. Lior Rokach, Dr. Meir Kalech

3. Academic Ranks and Tenure in Institutes of Higher Education

Dates	Institution and Department	Rank/Position
06.2010	Collage of Management Academic Studies, Computer Science School	Lecturer (מן החוץ)
03.2014	Ben-Gurion University of the Negev, Information System Engineering Department	Lecturer (מן החוץ)
10.2015	Collage of Management Academic Studies, Computer Science School	Lecturer (משרה עיקרית, מחקר)
03.2016	Bar-Ilan University, Computer Science Department	Lecturer (מורה מן החוץ)
04.2018	Collage of Management Academic Studies, Computer Science School	Senior Lecturer (מרצה בכיר)

4. Offices in Academic Administration

- Coordinator of the computer science subjects
- Member of the teaching committee
- Pioneer creator of Online Courses
- Head Coach of National Team of Israel in the Computer Science Olympics (IOI)

5. Scholarly Positions and Activities outside the Institution

Lecturer at Bar-Ilan University

6. Participation in Scholarly Conferences

a. Active Participation

Date	Name of Conference	Place	Subject of Lecture/Discussion	Role
2011	AAMAS	Taiwan	Online Anomaly Detection in Unmanned Vehicles	Speaker
2012	DX Workshop	UK	Sensor Fault Detection and Diagnosis for Autonomous Systems, Multi-Layered Model Based Diagnosis in Robots	Speaker
2013	AAMAS	US	Sensor Fault Detection and Diagnosis for Autonomous Systems	Speaker
2013	DX Workshop	Israel	A Hybrid Approach for Fault Detection and Diagnosis in Autonomous Systems	Speaker Organizer
2014	AAMAS	France	A Hybrid Approach for Fault Detection and Diagnosis in Autonomous Systems	Speaker
2014	DX Workshop	Austria	Improving a Multiagent Team with a Model-Based Diagnosing Coach	Speaker
2020	AAMAS	New Zealand	Efficient Hybrid Fault Detection for Autonomous Robots	Extended abstract

b. Organization of Conferences or Sessions

Date	Name of Conference	Place	Subject/Role of Conference, Comments	Role
2013	DX Workshop	Israel	The workshop of the AI diagnosis community	Organizer (helped Meir)

7. Invited Lectures\ Colloquium Talks

Date	Place of Lecture	Name of Forum	Presentation/Comments
2016	BGU	Department seminar	Ph.D. dissertation
2016	Colman	School colloquium	Ph.D. dissertation
2018	House of Air Force	The Seventh Israeli PHM Conference	Fault detection using big Data analysis

8. Research Grants

Role in Research	Co-Researchers	Topic	Funded by/Amount	Year
M.Sc. Student	Advisors	Anomaly Detection	Maf'at	2010
Ph.D. Student	Advisors	Spam detection	Deutsche Telekom	2012
Ph.D. Student	Advisors	Fault diagnosis	General Motors	2013

9. Scholarships, Awards and Prizes

The IBM Ph.D. Fellowship Award 2014-2015.

The IBM Ph.D. Fellowship Awards Program is an intensely competitive worldwide program, which honors exceptional Ph.D. students who have an interest in solving problems of interest to IBM and which are fundamental to innovation including, innovative software, new types of computers, technology, and interdisciplinary projects that create social and business value.

Outstanding Lecturer - The Collage Management of Academic Studies, 2014.

10. Teaching

a. Courses Taught in Recent Years

Year	Course Name	Type:	Degree	No. of Students
2008-11	Advanced Programming 1 and 2 (BIU)	High Learn course	TA	required undergrad course (thought all instances)
2010-2016	Algorithmic Programming (in Java, Colman)	High Learn course	Lecturer	required undergrad course (thought all instances)
2010-2014	Operating Systems Concepts (Colman)	High Learn course	Lecturer	required undergrad course (thought all instances)
2012-…	Object Oriented Programming (in C++, Colman)	High Learn course	Lecturer	required undergrad course (thought all instances)
2014-2017	Advanced Topics in Programming (in C#, BGU)	High Learn course	Lecturer	required undergrad course (thought all instances)
2016-2017	Object Oriented Software Engineering (Colman)	High Learn course	Lecturer	required undergrad course (thought all instances)
2016-…	Advanced Programming 2 (BIU)	High Learn course	Lecturer	required undergrad course (thought all instances)
2017-…	Advanced Software Development 1 and 2 (Colman)	High Learn course	Lecturer	required undergrad course (thought all instances)
2017-18	Introduction to computer science (BIU)	High Learn course	Lecturer	required undergrad course
2018-…	Anomaly Detection (BIU)	M.Sc. course	Lecturer	Selective M.Sc. course
2018-…	Advanced programming 1 (BIU)	High Learn course	Lecturer	required undergrad course (thought all instances)

2018	Computer Structure (BIU)	High Learn course	Lecturer	required undergrad course (thought all instances)
2019-…	Functional Programming in Scala (Colman)	High Learn course	Lecturer	required undergrad course (thought all instances)
2018-…	Algorithms 2 (Colman)	High Learn course	Lecturer	required undergrad course

b. **Supervision of Graduate Students**

I will help advising M.Sc. students in BIU.
I supervise undergrad students in Colman in the excellence program.

11. Miscellaneous

My Ph.D. dissertation have yielded **4 patents**, and **3 published journal papers**. An additional journal paper is currently under review.

Journal Papers:

1. On Fault Detection and Diagnosis in Robotic Systems, *E Khalastchi, M Kalech,* Computing Surveys (2018)
2. A Sensor-Based Approach for Fault Detection and Diagnosis for Robotic Systems*, E Khalastchi, M Kalech, L Rokach,* Autonomous Robots *(2017)*
3. A Hybrid Approach for Improving Unsupervised Fault Detection for Robotic Systems, *E Khalastchi, M Kalech, L Rokach,* Expert Systems with Applications *(2017)*
4. Fault Detection and Diagnosis in Multi-Robot Systems: A Survey, *E Khalastchi, M Kalech, Sensors (2019)*

Experience in supervision of final undergrad projects (BGU, Colman)

Teaching activities:

- Making algorithmic programming "the most important course" in the eyes of our graduates
- Establishing the rules of thumb for teaching programming the right way (מהפיכת התכנות)
- Introducing programming tests that take hold on a computer
- The unification of OO software engineering and algorithmic programming, and the creation of advanced software development course.
- Creating the automatic code-check system for programming assignments
- Coordinating the creation of the M.Sc. in Computer Science program
- Coordinating the creation of a coding-boot camp
- Creation of Anomaly Detection course for graduate students
- Creation of Functional Programming online course
- Head coach of the Israeli National Team in the Computer Science Olympics (IOI)

12. Professional Experience

IDF, Air-force 2000-2005, Major (reserved)

13. PUBLICATIONS

A. Ph.D. Dissertation

Model-based Diagnosis for robotic Systems

B. Articles in Refereed Journals

1. **Online Data-Driven Anomaly Detection in Autonomous robots**, *E Khalastchi, GA Kaminka, M Kalech,* Knowledge and Information Systems (2014).
2. **A Sensor-Based Approach for Fault Detection and Diagnosis for Robotic Systems**, *E Khalastchi, M Kalech, L Rokach* Autonomous Robots *(2017)*
3. **A Hybrid Approach for Improving Unsupervised Fault Detection for Robotic Systems**, *E Khalastchi, M Kalech, L Rokach,* Expert Systems with Applications *(2017)*
4. **On Fault Detection and Diagnosis in Robotic Systems**, *E Khalastchi, M Kalech,* Computing Surveys (2018)
5. **Fault Detection and Diagnosis in Multi-Robot Systems: A Survey**, *E Khalastchi, M Kalech, Sensors (2019)*

C. Articles in Conference Proceedings

1. **Detecting anomalies in unmanned vehicles using the mahalanobis distance**. *R Lin, E Khalastchi, GA Kaminka*, IEEE International Conference on Robotics and Automation (ICRA), 2010, 3038-3044
2. **Online anomaly detection in unmanned vehicles.** *E Khalastchi, GA Kaminka, M Kalech, R Lin.* 2011 The 10th International Conference on Autonomous Agents and Multiagent systems (AAMAS) volume1- 115-122.
3. **Towards Partial (and Useful) Model Identification for Model-Based Diagnosis.** *Vladimir Sadov, Eliahu Khalastchi, Meir Kalech, Gal A Kaminka,* in the Eighteenth International Workshop on Principles of Diagnosis (DX-10), Portland 2010
4. **Sensor Fault Detection and Diagnosis for Autonomous Systems**, *E Khalastchi, M Kalech, L Rokach, Y Shicel, G Bodek*. In the 23ed International Workshop on Principles of Diagnosis (DX-12), UK 2012
5. **Multi-Layered Model Based Diagnosis in Robots**. *E Khalastchi, M Kalech, L Rokach*. In the 23ed International Workshop on Principles of Diagnosis (DX-12) , UK 2012
6. **Sensor Fault Detection and Diagnosis for Autonomous Systems**, *E Khalastchi, M Kalech, L Rokach* . In the twelfth International Conference on Autonomous Agents and Multiagent Systems (AAMAS), US 2013
7. **A Hybrid Approach for Fault Detection and Diagnosis in Autonomous Systems**, *E Khalastchi, M Kalech, L Rokach*. In the 24th International Workshop on Principles of Diagnosis (DX-13), IL 2013
8. **A Hybrid Approach for Fault Detection and Diagnosis in Autonomous Systems**, *E Khalastchi, M Kalech, L Rokach*. International Conference on Autonomous Agents and Multiagent Systems (AAMAS), Paris 2014
9. **Improving a Multiagent Team with a Model-Based Diagnosing Coach**, *E Khalastchi, M Kalech, L Rokach*. In the 25th International Workshop on Principles of Diagnosis (DX-14), Austria 2014
10. **Efficient Hybrid Fault Detection for Autonomous Robots**, E Khalastchi, M Kalech. International Conference on Autonomous Agents and Multiagent Systems (AAMAS), New Zealand 2020

D. Summary of My Research Activities and Future Plans

My research involved exploration and creation of fault detection and diagnosis methods for robotic systems. Some of my methods are patented, others have contributed to other fields, e.g., spam detection, anomaly detection in patients during anesthesia. I have gained insights in machine learning, data driven approaches, model based approaches, knowledge based approaches, multi-agent systems and multi-robotic systems. I have dealt with UAVs and laboratory robots, and simulated robotic swarms.

These days I am interested in the use of anomaly detection approaches for prognostics and fault detection in different aircraft platforms. In particular, I'm investigating the use of hybrid data-driven and model-based approaches in real-time domains. Recently I used such a method to detected in advance (prognostics) and diagnose a faulty component that led to the crash of an Apache Helicopter of the IAF.

In addition, starting this year I am the head coach of Israel's national team in the Computer Science Olympics IOI.