Itamar Reis *PhD*

Sr. Machine Learning Developer

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Tel-Aviv, Israel /itamar-reis

Experienced data scientist and machine learning specialist with a background in physics. My main area of expertise is in extracting insights from complex data sets and implementing machine learning models to solve challenging problems.

Education

Tel-Aviv University 2021
PhD, Physics *Tel-Aviv, Israel*
- Thesis title: Data mining astronomical surveys, and the cosmic 21-cm signal
- Yosef Dotan Scholarship for achievements in research, 2020
- Scholarship for achievements in research, 2018

University of British Columbia 2014
MSc, Physics (Final grade: 96) *Vancouver, BC, Canada*
- Thesis title: Axion term in topological insulators with broken time reversal and parity
- Graduate achievement award, 2013

Tel-Aviv University 2010
BSc, Physics (Final grade: 96, Summa Cum Laude) *Tel-Aviv, Israel*
- Dean's honors list, 2010
- Ruth and Allen Ziegler dean of students scholarship, 2009
- Dean's honors list, 2009
- Dean's honors list, 2008

Work Experience

Ultima Genomics 2022 – present
Sr. Machine Learning Developer *Tel-Aviv, Israel*
- Develop and implement deep learning models for base calling in DNA sequencing processes
- » PyTorch, Tensorflow, Python Scientific Libraries, Git, AWS

NumerixSQuant 2021 – 2022
Data Scientist *Vancouver, BC, Canada*
- Research financial datasets to identify investment signals
- » Python Scientific Libraries, scikit-learn, qSQL

Broadcom 2014 – 2016
Software Engineer *Yakum, Israel*
- Develop and maintain software environment for a networking switch
- 'Spot Award' certificate of appreciation
- » C

Teaching Experience

University of British Columbia 2012 – 2014
Instructor, Undergraduate Laboratories in Physics *Vancouver, BC, Canada*

Tel-Aviv University 2017 – 2021
Instructor, Undergraduate Laboratories in Physics *Tel-Aviv, Israel*

Skills

Programming Languages Python Scientific Libraries, PyTorch, TensorFlow, C
Tools and Platforms Git, Amazon Web Services (AWS)
Specialized Knowledge Data Science, Machine Learning, Model Fitting, Inference, Physics, Astrophysics

Communication

English *Fluent* **Hebrew** *Native*

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Publications

Machine Learning in Astrophysics

Effectively using unsupervised machine learning in next generation astronomical surveys — January 2021
Astronomy and Computing, 34, 100450 — ***I. Reis***, *M. Rotman, D. Poznanski, et al.*

Detect the Unexpected: Novelty Detection in Large Astrophysical Surveys Using Fisher Vectors — July 2019
The 11th International Joint Conference on Knowledge Discovery — *M. Rotman,* ***I. Reis****, et al.*

Probabilistic Random Forest: A machine learning algorithm for noisy datasets — 20 December 2018
The Astronomical Journal, 156(6), 283 — ***I. Reis****, D. Baron, S. Shahaf*

Redshifted broad absorption line quasars found via machine-learned spectral similarity — 1 November 2018
Monthly Notices of the Royal Astronomical Society, 480(3), 3889-3899 — ***I. Reis****, D. Poznanski, Patrick B. Hall*

Detecting outliers and learning complex structures with large spectroscopic surveys - a case study with APOGEE stars — 11 May 2018
Monthly Notices of the Royal Astronomical Society, Volume 476, Issue 2 — ***I. Reis****, D. Poznanski, et al.*

Cosmology

Effect of the cosmological transition to metal-enriched star-formation on the hydrogen 21-cm signal — August 2022
Monthly Notices of the Royal Astronomical Society, Volume 514, Issue 3 — *M. Magg,* ***I. Reis*** *et al.*

Mapping discrete galaxies at cosmic dawn with 21-centimeter observations — July 2022
The Astrophysical Journal, Volume 933, Number 1 — ***I. Reis****, R. Barkana, A. Fialkov*

Shot noise and scatter in the star formation efficiency as a source of 21-cm fluctuations — April 2022
Monthly Notices of the Royal Astronomical Society, Volume 511, Issue 4 — ***I. Reis****, R. Barkana, A. Fialkov*

HERA Phase I Limits on the Cosmic 21 cm Signal: Constraints on Astrophysics and Cosmology during the Epoch of Reionization — January 2022
The Astrophysical Journal, Volume 924, Number 2 — *HERA Collaboration (including* ***I. Reis****)*

The subtlety of Ly-a photons: changing the expected range of the 21-cm signal — October 2021
Monthly Notices of the Royal Astronomical Society, Volume 506, Issue 4 — ***I. Reis****, A. Fialkov, R. Barkana*

High-redshift radio galaxies: a potential new source of 21-cm fluctuations — December 2020
Monthly Notices of the Royal Astronomical Society, Volume 499, Issue 4 — ***I. Reis****, A. Fialkov, R. Barkana*

Condensed Matter Physics

Self-organized topological state in the magnetic chain on the surface of a superconductor — 18 August 2014
Phys. Rev. B 90, 085124 — ***I. Reis****, D.J.J. Marchand, M. Franz*