

JONATHAN FRAINE

Data Science Consultant and Project Manager

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EXPERIENCE

Data Science Consultant

Zaka.AI and Beirut.AI

June 2019 – Current

- Computer vision team lead for business and educational platforms
- Deep learning based augmented reality, multi-target tracking, with human pose estimation, OpenCV, and Unity
- Data science consultancy & project management for Public & Private Sectors: Economics, Finance, Computer Vision, Remote Sensing
- ML educational development for Beirut AI Bootcamps and Tech Workshops¹

Research Scientist

Space Science Institute

Nov 2018 – Current

- Bayesian and genetic algorithm development for hyperparameter optimization w/ generative deep learning models.
- Improving quality assurance for the NASA Space Telescopes w/ deep learning
- Anomaly detection for several NASA Missions w/ machine & deep learning

Research Scientist and Deputy Project Manager

Space Telescope Science Institute

Feb 2017 – Nov 2018

- Deputy project manager of the Exoplanet Characterization Toolkit².
- Created the James Webb & Hubble Telescope Machine Learning Task Force
- Developed deep learning platform for classification of Hubble Space Telescope images; poised to save 1000 person hours per year.
- Co-developed the ExoCTK contamination visibility tool back end.
- Co-developed Bayesian inference & correlated noise package
- Co-developed instrument simulation software for exoplanet observations
- Wrote >15 unique documentation articles for JWST community support

Postdoctoral Research Associate

University of Arizona

Sept 2015 – Feb 2017

- Wrote the Stage-2 information extraction pipeline for adv. infrared detectors.
- Disrupted how NASA research scientists identify anomalous infrared pixels.
- Taught information extraction and pipeline development to our team.

Doctoral Research Associate

University of Maryland

Aug 2009 – Aug 2015

- Developed Bayesian inference analysis package for information extraction³
- Predocutorial Fellowship at California Institute of Technology.
- Predocutorial Fellowship at Pontificia Universidad Catolica de Santiago.

Selected Publications & Honors

United Nations

Economic and Social Commission of Western Asia Panelist (2019)

"Prospects of Innovation and Technology in Official Statistics" and
"Use of Technology in Official Statistics: Ethical Considerations"

NATIONAL ACADEMY OF SCIENCES

Exoplanet Science Strategy Published Contribution

"Transiting Exoplanet Characterization Beyond 2030: A Case for
Observing Giant Planets with Giant Telescopes" Fraine et al. 2018

NATURE PUBLICATION

Detection of Water Vapour on a Small Planet

"Water Vapour Absorption from the Clear Atmosphere of an
Exo-Neptune" Fraine et al. 2014 Vol. 513, Issue 7519, pp. 526-529

¹bootcamp.beirutai.org

²exoctk.stsci.edu

³github.com/exowanderer/wanderer

EDUCATION

PhD in Astrophysics

University of Maryland

2015

Predocutorial Fellowship

California Institute of Technology

2014

Predocutorial Fellowship

Pontificia Universidad Católica - Chile

2013

M.Sc. in Astrophysics

University of Maryland

2009 – 2011

M.Sc. in Computational Mathematics

University of Central Florida

2007 – 2009

B.Sc. in Physics & Astronomy

University of Central Florida

2003 – 2006

SKILLS

Project Management

Artificial Intelligence

Public Speaking

Deep Learning

Deep Analytics

Machine Learning

Random Forests

SVMs

Statistical Analysis

Bayesian Inference

Data Collection

Data Mining

Generative Modeling

Regression

Classification

Clustering

TOOLS

TensorFlow, Keras, Scikit-learn, Git, AWS

ANALYTICAL METHODS

Bayesian Inference, Predictive Analytics,
Time Series Analysis, Machine Learning,
Signal Processing, Simulation

DOMAIN KNOWLEDGE

Remote Sensing, Astrophysics,
Atmospheric Physics, Bayesian statistics,
Infrared Detectors

PROGRAMMING LANGUAGES

Python, \LaTeX

C/C++, Unix

Matlab, IDL

HTML, JavaScript, SQL

LANGUAGES

English

Arabic

Spanish

