

# Kilian Walsh

350 Sterling Street, Brooklyn, NY 11225 • (646) 363 - 5779 • kiliantics@gmail.com

[github.com/kilianbreathnach](https://github.com/kilianbreathnach) [linkedin.com/in/kilianwalsh](https://www.linkedin.com/in/kilianwalsh)

Astrophysicist-turned-ML-engineer, proficient with a range of tools and practices in statistical modeling, deep learning, computer vision, data engineering, and MLOps. Primary languages are python, C/C++, and julia, most comfortable in Linux. Open source enthusiast, passionate about following the latest developments in software tools and data science methods. Experienced educator and team collaborator, enjoys communicating and presenting complex topics at both technical and lay levels. Speaks English and German fluently and high intermediate French. Enjoys sports (esp. swimming, running, sailing), woodwork (incl. boats, japanese joinery, and musical instruments), bicycle/motorcycle maintenance, brewing, and cooking/baking.

## Work

### Helm.AI

May 2023 - Feb 2025

#### Machine Learning Engineer

- Working in the solutions engineering team at an (100+ headcount) autonomous vehicle startup on client-facing projects
- Projects include computer vision model development and training, embedded software development and deployment for robotics environments, research tool infrastructure development, developing software to automotive compliance standards
- Clients include multinational vehicle manufacturers with market cap of \$10B+

### Artisight Inc.

Mar 2019 - Oct 2022

#### Machine Learning Scientist

- Computer vision and NLP research and development at a (headcount 5 till 60+) healthcare technology startup developing IoT solutions for hospitals
- Experience building on-prem deployments end-to-end for a range of applications using audio and video sensor data to improve healthcare efficiency and automation

## Education

### New York University

Sep 2011 - Jan 2019

#### Ph.D. – Physics – thesis: “An Exploration of New Links in the Galaxy-Halo Connection”

- Research Topics: astrophysics, cosmology, galaxy evolution, dark matter, statistical modeling
- Funded by NYU scholarships and National Science Foundation

### Trinity College Dublin

Sep 2007 - Jun 2011

#### B.A. – Natural Science (Physics & Astrophysics major) with First Class Honours

- Final year dissertation project in Asteroseismology completed at University of Aarhus in Denmark
- Sat voluntary advanced exams to win competitive *Foundation Scholarship*, granting free tuition, housing, meals, and stipend

## Research & Projects

### Helm.AI

May 2023 - Present

#### Autonomous Vehicle Solutions Engineering

- building and training perception software deployed on vehicles in the automotive and adjacent industries
- adapting trained models and SDK for use with a range of hardware platforms and performance specifications
- contributing to in house tooling for data management and model development and deployment
- *Skills*: deep learning foundation models, unsupervised learning, generative AI, MLOps, robotics
- *Tools*: pytorch, docker, GCP, CUDA, NVIDIA TensorRT, ONNX, C/C++, Weights & Biases, github CI/CD, UNet, Transformers, ROS

### Artisight Inc.

March 2019 - October 2022

#### Computer Vision and Natural Language research and ML infrastructure engineering

- developing and training computer vision models deployed in hospital automation systems
- employing NLP and dialogue models for virtual assistant and automated data entry systems
- *Skills*: deep learning, self-supervised learning, computer vision, object detection, audio processing, NLU, data engineering
- *Tools*: pytorch, docker, Azure, CUDA, NVIDIA TensorRT and Triton, C/C++, django, flask, rabbitmq, kafka

### New York University

May 2013 - Jan 2019

#### Cosmological large scale structure and galaxy evolution (with Prof. Jeremy Tinker and David Hogg)

- Statistical modeling of galaxy data in largest survey made to date (SDSS), within a scientific collaboration of 1000s of researchers, to understand the universe's underlying dark matter structure and how it affects the galaxy distribution
- Constructing models for 100k+ astronomical images to build a probabilistic catalogue with [astrometry.net](https://astrometry.net)
- Participated in hackathons, classwork, and personal projects with diverse datasets (astronomy, web, gov/geo, financial, hardware sensors) to study trends and to understand and test novel techniques and models.
- *Skills*: Mathematical modeling, Bayesian inference, large datasets, MCMC, numerical simulation, parallel computing, problem-solving, scientific writing/presentation, data analysis, data visualisation, literature review
- *Achievements*: Made scientific-grade measurements and analysis for several papers, presented at conferences across USA, mentored student researchers, made contributions to widely-used astronomy code
- *Tools*: julia, python (scipy, cython, emcee, matplotlib...), C, bash, MPI, git, javascript, SQL, AWS,

### Undergraduate Research Experience

Sep 2010 - Jan 2011

- **(Aarhus University, Denmark) Final year thesis project**: Asteroseismology research project that led to upgraded features in a widely-used stellar simulation codebase.

Jun 2010 - Sep 2010

- **(UCSB) Funded summer research at California NanoSystems Institute**: Studied functional structure of photoactive protein by DNA mutation and protein expression to add MRI markers and measure electromagnetic spin resonance during activation