

Logan M. Edwards

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EDUCATION

Florida Institute of Technology - Melbourne, FL

Aug 2024 - Present

B.S. in Astronomy & Astrophysics | Second Major: Planetary Science | Minor: Sustainability

GPA: 3.6 | Anticipated Graduation: 2027

Relevant Coursework: Observational Astronomy; Methods & Instrumentation for Astronomy; Deep Learning (CNNs & PyTorch); Classical Mechanics; Partial Differential Equations; Modern Physics; Introduction to Python; Nanotechnology Lab; Introduction to Aerospace Engineering; Economics

University of Oxford (Study Abroad) - Oxford, UK

Jun 2025 - Aug 2025

Coursework: Differential Equations; Scientific & Technical Communication

RESEARCH & TECHNICAL PROJECTS

Stellar Spectral Classification from Pan-STARRS Imagery

Independent deep learning project | Python, TensorFlow, Gaia DR3, Pan-STARRS 1, HIPPARCOS, WISE

- Built a multi-task convolutional neural network that predicts Morgan-Keenan spectral letters (O/B/A/F/G/K/M), letter×subclass combinations, and evolutionary stage from Pan-STARRS RGB image cutouts.
- Assembled a 96,039-sample dataset by querying Gaia DR3, HIPPARCOS, Pan-STARRS 1, and WISE for coordinates, magnitudes, colors, and spectral labels, applying magnitude-aware stretching and automated quality gates.
- Achieved 84.3% top-1 and 98.4% top-2 letter accuracy across the seven-class softmax head, with 67,227/14,406/14,406 train/validation/test splits and class balancing to correct steep O- and M-type underrepresentation.
- Found that most misclassifications fall between adjacent H-R diagram pairs (A/F, F/G, K/M), which indicates the network learned the stellar temperature sequence.
- Published a technical report documenting catalog ingestion, quality gating, architecture, and per-class evaluation.

Drone Target Identification and Classification System

Independent deep learning project | Python, TensorFlow, YOLO, OpenCV, Computer Vision

- Developed a detection system that pairs a YOLO segmentation front end with a multi-output CNN classifier for real-time target identification in drone and camera footage.
- Consolidated 182,413 images from multiple public sources into a unified, hash-deduplicated dataset spanning 11 fine-grained classes and 3 coarse validity categories, with stratified 70/15/15 splits and per-label caps.
- Trained a regularized ConvNet (32→64→128 channel progression, dual classification heads) using tf.data pipelines, augmentation, learning-rate scheduling, and mixed-precision training.
- Reached 87.1% fine-class accuracy (0.836 macro F1) and 91.3% coarse accuracy, against 23.5% and 34.5% baselines respectively.
- Wrote a technical report covering dataset construction, deduplication, architecture, and class-level evaluation.

Ortega Telescope Exposure Time Calculator

Observational instrumentation utility | Python, JavaScript, photometry

- Built a photometric exposure-time calculator that derives single-frame and total integration times from target magnitude, desired signal-to-noise ratio, seeing, sky brightness, and airmass via a closed-form quadratic solution.
- Modeled all five Johnson-Cousins filters (U, B, V, R, I; 3656 to 8797 Å) with per-filter extinction coefficients ranging 0.60 to 0.08, plate scale, pixel geometry, and $2.9\text{ e}^-/\text{pixel/s}$ read noise.
- Indexed sky background across five lunar-age tables (0 to 14 days) and migrated the tool from a Google Colab script used during observing runs to an interactive browser-based calculator.

AspireCURES Patient-Matching Web Platform

Production platform, aspirecures.com | HTML/CSS/JavaScript, Cloudflare Pages & Functions, Cloudflare KV, Zoho CRM, GitHub Actions

- Built and maintain the public platform that connects patients affected by rare white matter diseases and leukodystrophies with clinical trials, research studies, genetic testing, specialists, and advocacy opportunities.
- Led the migration from Squarespace to Cloudflare Pages, rebuilding the site across roughly 15,000 lines of hand-written HTML/CSS/JavaScript with serverless patient registration through Pages Functions, Cloudflare KV as a durable write backup, and Zoho CRM for lead handoff.
- Built nine disease-specific program pages covering AARS1/AARS2, CSF1R-ALSP/BANDDOS, Nasu-Hakola, Alzheimer's disease, Lewy body dementia, frontotemporal dementia, multiple sclerosis, Huntington's disease, and Friedreich's ataxia, each tracking current research and recruiting trials.

- Automated a twice-weekly research feed that pulls from Europe PMC, PubMed, and ClinicalTrials.gov and publishes AI-assisted summaries of new papers and trials through GitHub Actions.

PUBLISHED DATASETS

Star Image Bundles: Pan-STARRS RGB cutouts with Morgan-Keenan spectral labels for stellar classification.

kaggle.com/datasets/loggger/star-image-bundles

FPV Images: 182,413 labeled images for drone target identification. kaggle.com/datasets/loggger/fpv-images

PROFESSIONAL EXPERIENCE

AspireCURES - Melbourne, FL

Chief Technology Officer

Aug 2025 - Present

- Direct all web development and technical operations for a private company that matches patients affected by rare white matter diseases and leukodystrophies with clinical trials, research studies, genetic testing, specialists, and advocacy opportunities.
- Manage the platform architecture, deployment, analytics, CRM-backed lead management, and the automated research content pipeline behind nine disease programs.

Sisters Hope Foundation - Melbourne, FL

Vice President of Database Management

May 2025 - Present

- Manage and maintain the organization's patient database, overseeing structural updates and ongoing record management for a 501(c)(3) global nonprofit serving families affected by rare neurological disease.
- Perform data entry and verification that keep patient records accurate and complete.

Program Support Associate

Jun 2024 - May 2025

- Maintained internal databases and streamlined data workflows, producing reports that supported program planning and evaluation.
- Led the integration and modernization of the patient database, earning promotion to Vice President of Database Management.

Intern

Jun 2021 - Jun 2024

- Supported fundraising efforts, provided general technical support, and assisted with patient care and outreach.

TECHNICAL SKILLS

Programming & Frameworks: Python, PyTorch, TensorFlow/Keras, HTML/CSS/JavaScript, Bash, Perl

Machine Learning: Deep Learning, Convolutional Neural Networks, Computer Vision, YOLO, OpenCV, Multi-Task Learning, Data Augmentation, Model Evaluation

Astronomy & Data Analysis: Observational Astronomy, Photometry, Telescope & CCD Instrumentation, Astronomical Data Reduction, Survey Catalogs (Gaia DR3, Pan-STARRS 1, HIPPARCOS, WISE), Statistical Data Analysis, Data Modeling

Laboratory Instrumentation: Transmission Electron Microscopy (TEM), Scanning Electron Microscopy (SEM), Atomic Force Microscopy (AFM), Scanning Tunneling Microscopy (STM)

Web & Infrastructure: Cloudflare Pages, Pages Functions, Cloudflare KV, GitHub Actions, GitHub Pages, Zoho CRM, Content Security Policy, Web Accessibility

Scientific Disciplines: Physics, Mathematics, Planetary Science, Environmental Science, Scientific & Technical Communication

Management & Operations: Database Administration, Database Design, CRM Integration, Project Management, Program Management, Operations Management, Board Governance