

J.Emmanuel Johnson

Curriculum Vitae

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Education

- 2009–2013 **B.S.**, *Florida Institute of Technology, USA*, **Physical Oceanography**.
- 2009–2013 **B.S.**, *Florida Institute of Technology, USA*, **Mathematical Science**.
- 2013–2016 **M.S.**, *Rochester Institute of Technology, USA*, **Computational Mathematics**.
Thesis: *Schrödinger Eigenmaps for Manifold Alignment of Multimodal Hyperspectral Images* [[Thesis](#)]
- 2017–2021 **PhD**, *Universitat de València, Spain*, **Electrical Engineering**.
Thesis: *Estimating Information in Earth System Data with Machine Learning* [[Thesis](#)]

Work Experience

- 2021–Present **PostDoctoral Researcher**, [CNRS \(FRANCE\)](#) | [MEOM](#) | [IGE](#).
Developed machine learning strategies to improve satellite observation interpolation on a global scale. Created a suite of MLOPs tools to process large ocean simulations. Used neural networks and achieved speed-ups and matched performance of operational methods.
Tools: JAX, PyTorch(-Lightning), SLURM, JeanZay, Amazon Web Service
- June-2021–
Aug-2021 **Machine Learning Engineer**, [TRILLIUM TECHNOLOGIES](#) | [FDL](#).
Worked on a team in collaboration with Lockheed-Martin to extract features that correspond to lightning from point-cloud data from satellites. Used autoencoders, graphical neural networks and clustering to extract meaningful features. My role was to implement them machine learning pipeline.
Tools: PyTorch(-Lightning), Azure, SQL
[Presentation](#) | [Paper](#)
- Jan-2021–
March-2021 **Machine Learning Engineer**, [TRILLIUM TECHNOLOGIES](#).
Worked on a team in collaboration with UNOSAT developers to produce an end-to-end MLOPs solution to produce fast and high quality floodmaps for researchers and emergency response units. My primary role was data preparation, preprocessing and documentation. Our team demonstrated neural network capabilities for flood extent cloud detection and flood extent segmentation with uncertainty estimates.
Tools: PyTorch(-Lightning), Google Cloud Platform, Google-Earth-Engine
[Repository](#) | [Video](#)
- June-2020–
Aug-2020 **Machine Learning Engineer**, [TRILLIUM TECHNOLOGIES](#) | [FDL](#).
Worked on a team in collaboration with NASA to process data from telescopes of stars in outer space and infer star properties. Used Bayesian inference for posteriors for the star properties and transfer-learning with neural networks to predict star properties. My role was to implement the end-to-end pipeline with testing. Our team demonstrated a x10,000 speedup over traditional methods.
Tools: PyTorch(-Lightning), Google Cloud Platform
[Guidebook](#) (pg 65) | [Video](#) | [Paper](#)

- June-2016– **Image Science Intern**, [COLLINS AEROSPACE](#).
 Dec-2016 Designed a GUI to aid in experts labeling images for automated edge detection schemes. Worked on post-processing of real-time LiDAR data for autonomous systems.
Tools: MATLAB, C
- 2013–2016 **Graduate Teacher Assistant**, [ROCHESTER INSTITUTE OF TECH](#).
 I oversaw labs/workshops for calculus, differential equations and linear algebra sections and assist the students with any questions about their assignments. Graded student homework's, quizzes and/or in-class assignments based off of completion and/or performance.
- 2012–2013 **Technology Support Team**, [FLORIDA INSTITUTE OF TECH](#).
 A part of a team that developed an automated system software to setup and deploy ready-made computers for faculty and staff. A part of the design stage for a project that would systematically back-up university computers which would allow faculty with malfunctioning systems to simply revert to a previously working checkpoint.
Tools: Windows, Linux, MacOS, Unix, Java
- 2011–2013 **Desktop Support Field Technician**, [FLORIDA INSTITUTE OF TECH](#).
 A primary contact for troubleshooting computer related software and hardware issues over the phone and in person. I also would go on-site to fix printers, computers and network-related issues in addition to repairing malfunctioning computers for university faculty and staff.
Tools: Windows, Linux, MacOS, Microsoft Office Suite
- 2009–2011 **ABA Support Video Production Assistant**, [FLORIDA INSTITUTE OF TECH](#).
 Assisted with video recording, video editing, video processing and publishing of prerecorded lectures from teachers to be uploaded to the online database. Helped online students with issues revolving around them accessing their online classes via the online platform.

Programming Skills

- Primary: Python, UNIX
 Secondary: MATLAB, Julia, FORTRAN, C, MPI, SQL
 Python: PyTorch(-Lightning), TensorFlow (Keras), JAX
 MLOPs: DVC, Weights & Biases, GitHub Actions, Docker
 Cloud: SLURM, Google Cloud Platform, Azure, Amazon Web Service

Other Links

- Website: jejohnson.netlify.app
 GitHub: github.com/jejohnson
 Publications: scholar.google.com
 Conferences: jejohnson.netlify.app/conferences
 Talks: jejohnson.netlify.app/talks
 LinkedIn: linkedin.com/in/jejohnson

Languages

- English **Mothertongue**
 Spanish **Advanced** *Full Working Proficiency*
 French **Intermediate** *Basic Working Proficiency*

References

- MEOM/IGE **Dr. Julien Le Sommer**, Principle Investigator.
Senior Scientist (CNRS) | Head of Computational Oceanography Group
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<https://lesommer.github.io>
- Trillium **Sairam Sundaresan**, FDL Team Lead | Co-Author.
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- UV **Dr. Gustau Camps-Valls**, Academic Advisor | Co-Author.
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