Artemis Anna Pados

Curriculum Vitae

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Career Objectives

I am a senior in EECS at MIT. I will pursue a Ph.D. degree in Computer Science/Electrical Engineering/Mathematics with emphasis in machine learning and data science and attempt an academic career thereafter.

Academic Preparation

Fall 2022-Present **Massachusetts Institute of Technology (MIT)**, *Cambridge, MA*, (GPA: 5.0/5.0)

- B.S. in Electrical Engineering and Computer Science (Course 6-2) expected May 2026
- M.Eng. in Electrical Engineering and Computer Science with concentration in Artificial Intelligence starting Sept. 2026

Summer 2021 **Stanford University**, *Stanford, CA*

- MATH 51 Linear Algebra, Multivariate Calculus, and Modern Applications (Grade A)

Summer 2020 **Harvard University Pre-College Summer School**, *Cambridge, MA*

- "Introduction to Programming, Computational Science, and Data Visualization using Python"

2018-2022 **Stanford Online High School**, *Stanford, CA*, (GPA: 3.9/4.0; weighted 4.34/4.0)

Summer 2018 **Summer at Stanford University**, *Stanford, CA*

- Week-long intensive courses: "Computational Thinking in Mathematics and Beyond using Wolfram language" and "Approaching Infinity"

2015-2017 **University at Buffalo, SUNY**, *Buffalo, NY*, (GPA: 4.0/4.0)

- University courses: GSE 120 LEC Logic and GSE 121 LEC Logic and Sets (through UB Gifted Math Program)

2015-2017 **University at Buffalo, SUNY, Gifted Math Program (GMP)**, *Buffalo, NY*

- Select group of 60 highest achieving students from middle/high schools in Western NY
- GMP 1 (2015-2016): Advanced Algebra, Geometry, Probability
- GMP 2 (2016-2017): Set theory, Basic Number theory, Groups, Relational Systems, Logic and Proofs

Other Academic Preparation

Jan. 2023 **Gridspace X IAP Educational Program on NLP**

- Month-long series of educational talks and enriching exercises to learn production-standard speech technology (linguistics and language models) from LA startup Gridspace

Research

June 2025–Aug. 2025 **Research Intern**, Numerical Algorithms and High-Performance Computing (ANCHP) Group, École Polytechnique Fédérale de Lausanne (EPFL), Prof. Daniel Kressner

- Topic: Numerical linear algebra, random matrices, and structure-exploiting methods for low-rank matrix approximation and joint diagonalization, with applications in multimodal data analysis and spectral clustering.
- Awarded funding from MIT International Science and Technology Initiatives (MISTI) program.
- Publication: Artemis A. Pados, Haoze He, and Daniel Kressner, "RJD-BASE: Randomized Joint Diagonalization with principled selection for multi-modal spectral clustering," to be submitted to *IEEE Transactions on Signal Processing* in Aug./Sept. 2025.

  Description: The paper proposes a randomized, selection-driven framework for spectral clustering across multiple data modalities. The method leverages efficient, parallelizable eigenvalue computations and a principled common-smoothness-based selection rule to improve clustering accuracy while maintaining low computational cost compared to classical approaches.

June 2023-May 2025 **UROP (Undergraduate Research Opportunity Program)**, Network Coding and Reliable Communications Group, MIT, Prof. Muriel Medard

- Topic: Algorithmic developments and theoretical performance analysis for error-correcting decoding algorithms such as GRAND and variants, optimal guesswork, bias detection, and estimation of discrete probability distributions

Spring 2023 **Independent Research**, with EECS Ph.D. student collaborator, Florida Atlantic University (FAU)

- Topic: Singular-vector decomposition by deep-neural-network means
- Publication: Artemis A. Pados *et al.*, "Singular Value Decomposition of arbitrary real matrices via feedforward neural networks," to be submitted to *IEEE Signal Processing Letters* in Fall 2025.

  Description: We revisit the fundamental task of computing the leading singular vector of an arbitrary real-valued matrix by solving a constrained Frobenius norm minimization problem via backpropagation on a fixed feedforward neural network model. The network is optimized instance-wise to extract the dominant left singular vector of any input matrix. By iteratively applying this process with orthogonal projections and transposing input matrices, the entire set of left and right-singular vectors can be recovered. The proposed approach offers linear-time scalability in network complexity and is particularly well-suited to GPU-accelerated platforms. Experimental results confirm its accuracy in approximating classical SVD numerical solutions and highlight its potential as a fast alternative in modern computational environments.

Summer 2021 **NSF REU Program**, Institute for Sensing and Embedded Network Systems Engineering (I-SENSE), Florida Atlantic University (FAU), Prof. Jason Hallstrom

- Topic: Infrastructure Systems - Mobility Sensing and Analytics for Smart Cities
- Publication: Nathan Hurtig, Maren Sorber, Artemis A. Pados, and Jason O. Hallstrom. "Temporal stability of RSSI as a pedestrian localization metric," in *Proceedings of ACM Southeast Conference*, April 2022, pp. 159–166. https://doi.org/10.1145/3476883.3520206

  Abstract: As wireless sensor network (WSN) technology advances, more practical applications become possible. One important application involves mobility analytics. Data concerning how people move in urban environments can inform city planners and businesses to support improved decision-making. Numerous studies have been conducted on pedestrian localization using the received signal strength index (RSSI) of mobile device WiFi probe requests. However, these studies were only conducted over the span of days. Since a real-world WSN requires long-term, reliable accuracy, further experimentation is required to determine whether accuracy is maintained over time. We evaluate the long-term viability of RSSI as a localization metric through an analysis of experimental results using a robotic testbed platform.

Summer 2021 **Summer Research**, Florida International University (FIU), Prof. Mark Finlayson

- Topic: Natural Language document processing for the US Patent and Trademark Office

Spring 2020 **Research Project in Philosophy**, Stanford Online High School

- Topic: Academic critique and proposed revision of Plato's ideal city-state
- Publication: Artemis A. Pados, "The Dynamic Republic," in *Proceedings 3rd Harvard-Japan International Young Researcher's Conference (IYRC)*, Sept. 2020, pp. 162-164.

  Abstract: The ancient Greek philosopher, Plato, writes in Book IV of "The Republic" that there are three parts to the human soul – "appetite, spirit, and wisdom"- and these categories directly translate to how an ideal state/society should be run. In this research paper, I argue that there are two main flaws with Plato's ideal city structure and I explain how these flaws may be rectified.

  View/download paper

Teaching

Fall 2025 **Undergraduate Teaching Assistant in 18.C06 Linear Algebra and Optimization**, *MIT*

- Taught two hour-long recitations twice per week, held office hours, graded exams

Fall 2024 **Undergraduate Teaching Assistant in 18.C06 Linear Algebra and Optimization**, *MIT)*

- Taught two hour-long recitations twice per week, held office hours, graded exams

Fall 2024 **HKN EECS Certified Tutor**, *MIT*

- Certified HKN tutor for undergraduates in select EECS courses

Spring 2023 **Undergraduate Teaching Assistant in 8.02 Physics II: Electricity and Magnetism**, *MIT*

- In-class lecture and problem solving assistance, 4 hrs/week

Summer 2020 **Little Me Academy High School**, *Cagayan de Oro, Philippines*

- Taught 10th Grade math live via Zoom to high school class during the coronavirus pandemic

Summer 2020 **Tutoring university students at Florida Atlantic University (FAU)**

- Tutored university students via Zoom in Calculus 1 and 2 during the coronavirus pandemic

Select Course Projects

Spring 2025 **Robotics Portfolio**, *6.4200 Robotics: Science and Systems, MIT*

- I developed full-stack autonomous navigation solutions (wall following, visual servoing, localization, path planning, path following, etc.) with my team in simulation and on a physical racecar using ROS2. We competed against other teams to complete challenges and presented our work with panel-led briefings and technical papers.
- View work on team website

May 2021 **Lattice Point Geometry/Discrete Math "Exercise Portfolio"**, *Lattice-Point Geometry, Discrete Math, Stanford Online Highschool*

- During "University Discrete Mathematics" and "University Lattice-Point Geometry" high school courses (each semester-long), I created a LaTeX portfolio with exercises, derivations, and proofs that I completed exploring the algebraic structure of the lattice plane, Pick's, Blichfeldt's, and Minkowski's Theorems, as well as concepts in number theory, linear algebra, and graph theory.
- View/download portfolio

Distinctions

2024-2025 **Academic All-American Award - College Sports Communicators (CSC)**

- 9th only student athlete in MIT program history to receive this award.
- Award recognizes top upperclassman student-athletes who excel in both academic and athletic performance nation-wide.

2024-2025 **Academic All-District Award - College Sports Communicators (CSC)**

- Award recognizes top upperclassman student-athletes who excel in both academic and athletic performance in the northeast district.

2025 **NEWMAC Conference All-Academic Team**

2024 - Present **HKN EECS Honor Society**

- In top fourth of grade by GPA in EECS at MIT

2024, 2023 **NEWMAC Conference All-Academic Team**

2023 **ITA (Intercollegiate Tennis Association) Scholar Athlete** (GPA 5.0/5.0) and **All-Academic Team**

2010-2015 **National French Language Contest (Concours National de Français)**: Placed 4th, 3rd, and 2nd in the country, American Association of Teachers of French (AATF)

Computer Skills

- Python
- C++
- C
- Assembly Language
- Keras/Tensorflow
- Wolfram Language
- Julia
- R
- Java
- Matlab

- LaTeX
- ROS2
- RViz
- PyTorch
- Linux/Bash
- Docker

Languages

- English (native)
- Greek (fluent)
- French (proficient)

Select Courses

- **6.1910 Computation Structures**, *MIT*
- **6.4200 Robotics: Science and Systems**, *MIT*
- **6.3900 Machine Learning**, *MIT*
- **6.310 Dynamic System Modeling and Control Design**, *MIT*
- **6.1210 Algorithms**, *MIT*
- **18.C06 Linear Algebra and Optimization**, *MIT*
- **8.01 Classical Mechanics**, *MIT*
- **6.100A Programming in Python**, *MIT*
- **Discrete Mathematics Proof-based University course**, *Stanford Online Highschool*
- **AP Computer Science in Java**, *Stanford Online Highschool*
- **Number Theory University course**, *Stanford Online Highschool*
- **6.7960 Deep Learning**, *MIT*
- **18.065 Matrix Methods**, *MIT*
- **6.3000 Signal Processing**, *MIT*
- **18.05 Probability and Statistics**, *MIT*
- **6.2000 Circuits and Electronics**, *MIT*
- **6.120A Discrete Math and Proofs for Computer Science**, *MIT*
- **8.02 Electricity and Magnetism**, *MIT*
- **Programming in C++**, *Stanford Online Highschool*
- **Lattice Point Geometry Proof-based University course**, *Stanford Online Highschool*
- **Logic University course**, *Stanford Online Highschool*

Volunteer Work/Community Engagement

Fall 2022- Present **Mentor at Symbiotic STEM**, *Cambridge, MA*

- Mentor for middle and high school students with STEM interests: Program aims to improve recruitment in STEM

Spring 2020 **Assembled 400 disposable face shields for the Memorial Healthcare System of South Florida**, *Boca Raton, FL*

- Participated as a volunteer to produce 16500 disposable face shields for local hospitals and medical practices

Sports

Competed in tennis nationally and internationally; reached career-high international ranking (ITF) #639; ranked #77 (4-star recruit) in U.S. in high school graduating class.

2022- Present **MIT Varsity Women's Tennis**, *Cambridge, MA*

- Competition in NEWMAC conference and NCAA level

2017-2022 **Evert Tennis Academy**, *Boca Raton, FL*