Carl Kolon

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I am a full stack engineer with a strong mathematical foundation. I write APIs, frontend applications, and performant backend code. Before that, I spent 5 years leading engineering and safety teams aboard nuclear submarines.

EDUCATION

US Naval Academy – B.S. with Distinction, Mathematics with Honors.
3.89 GPA, Trident Scholar, Julian Clancy Frazier Mathematics Research Award, Chinese Minor.
Thesis: *Stability of Nonlinear Swarms on Flat and Curved Surfaces, DTIC*

PROFESSIONAL EXPERIENCE

Software Engineer: Vannevar Labs (Jun 2023 – Present)

- Manage a LLM API deployment to government customers as the lead developer and main point of contact.
- Main contributor to the frontend (React) and backend (Django + FastAPI) of my company's geospatial data visualization tool. I am obsessed with making it run quickly, even with a huge (~10b row) database and many features.
- Contribute code to almost every project in the company, including mature and experimental products.

Nuclear Submarine QA/Safety Officer: US Navy (May 2018 – Jun 2023)

- Built a culture of compliance with rigorous SUBSAFE standards.
- Led 62 nuclear trained sailors and responsible for $1 billion of equipment.
- Selected as Submarine Junior Officer of the Year for 2022.

ACADEMIC EXPERIENCE

Researcher: US Naval Academy (Trident Scholar) (Mar 2017 - May 2018)

- Proved novel results about the stability of swarm models, a nonlinear dynamics problem.
- Presented my work at UMD, SASMC, and Trident Scholar Conferences.

Research Intern: Naval Research Laboratory (Jun 2017 – Jul 2017)

- Investigated swarm collisions with delay coupling. Cited by 11 serious research articles in the field of nonlinear dynamics, with the most recent two in 2023.

ACADEMIC WORK

- C. Kolon, C. Medynets, I. Popovici. *On the stability of Rotating States in Second-Order Self-Propelled Multi-Particle Systems.* 2023.
- Presented *Seeing Underwater with Neural Networks* at Tidal Ocean Seminar, Jun 2023.
- Presented *Stability of Nonlinear Swarms on Flat and Curved Surfaces* at UMD Graduate Mathematics Seminar, Apr 2018, Service Academy Student Mathematics Conference, May 2018, and Trident Scholar Conference, May 2018 (video).
- C. Kolon and I. Schwartz. *The Dynamics of Interacting Swarms*. 2017. DTIC.

PROJECTS - *These and many others are described fully on my blog.*

- A RNN-based sonar processing algorithm that outperforms the Navy's current tools.
- An open-source semantic search tool for Jrnl, the command line note app.
- A linear program which schedules duty shifts, now used by submariners in Norfolk, VA.

SKILLS

Professional Experience In: Python (Django, FastAPI, Pytorch), Typescript/Javascript (Node.js, React, multiple UI frameworks), Containerized Environments (Kubernetes, Docker, EKS, ECS, Rancher), Linux/Unix Shell, Temporal, Database Software (PostGIS/Postgres, SQLite).
Academic Experience In: Tensorflow (certified), Wolfram Mathematica, LaTeX, Robotics Simulation.
Hobby Experience In: Liquid (Jekyll), C#, C++, R, Gusek, Ruby, QGIS.
Language Skills: Proficient in Mandarin (Speaking), lived in Beijing for 9 years.