Senior Machine Learning Engineer - Mission Innovation Lab

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Category: Software Engineer/Programmer
Military

Senior Machine Learning Engineer (Full-Stack / Applied-Research) - Mission Innovation Lab

At the SEI AI Division, we conduct research in applied artificial intelligence and the engineering questions related to the practical design and implementation of AI technologies and systems. We currently lead a community-wide movement to mature the discipline of AI Engineering for Defense and National Security.

As our government customers adopt AI and machine learning to provide leap-ahead mission capabilities, we

- build real-world, mission-scale AI capabilities through solving practical engineering problems
- discover and define the processes, practices, and tools to support operationalizing AI for robust, secure, scalable, and human-centered mission capabilities
- prepare our customers to be ready for the unique challenges of adopting, deploying, using, and maintaining AI capabilities
- identify and investigate emerging AI and AI-adjacent technologies that are rapidly transforming the technology landscape

Are you creative, curious, energetic, collaborative, technology-focused, and hard-working? Are you interested in making a difference by bringing innovation to government organizations and beyond? Apply to join our team.

Overview

As a Machine Learning Engineer who can take research ideas from concept to prototype, you will lead independent applied-research projects for defense-focused missions.

The ideal candidate is comfortable across the full stack (data pipelines, model development, API services, and secure deployment) and eager to explore novel AI and ML theory while delivering mission-scale capabilities.

The Mission Innovation Lab within the SEI's AI Division works with the defense and national security community to translate the "recently possible" in AI into reliable mission and warfighting capabilities.

Key Responsibilities

Design, implement, and evaluate state-of-the-art ML models (computer-vision, NLP, planning, etc.) using frameworks such as TensorFlow, PyTorch, Torch, or Caffe.

Build and maintain robust data pipelines, ETL processes, and backend services in Python, C/C++, and Java.

Lead rapid-prototyping efforts, translate research results into operational prototypes, and test for performance, robustness, and security.

Define and refine DevSecOps practices for ML (model registries, containerized deployment, continuous integration/continuous delivery, security scanning).

Mentor junior team members, collaborate with researchers, government customers, and other engineers, and contribute to technical strategy for the lab.

Required Qualifications

B.S. in Computer Science, Electrical Engineering, Statistics, or related field with >=10 years of experience ; OR M.S. with >=8 years ; OR Ph.D. with >=5 years of relevant experience.

- Ability to obtain and maintain an active Department of War security clearance.
- You must be able and willing to work onsite 5 days per week at an SEI office in either Pittsburgh, PA or Arlington, VA.

Strong experience in one or more programming language such as Python, C/C++, and Java; comfortable developing production-grade code and APIs.

Solid understanding of ML theory, statistical learning, and common algorithms.

Hands-on experience with TensorFlow, PyTorch, Torch, Caffe, or similar deep-learning libraries.

Familiarity with CI/CD pipelines, container orchestration (Docker/Kubernetes), model versioning, and security-focused tooling.

Desired Experience

Proven track record of independent applied-research projects that resulted in demonstrable prototypes or operational capabilities.

Publications or open-source contributions in AI and ML, especially in adversarial or robust ML.

Experience working on defense or other high-impact government programs.

Ability to quickly learn emerging AI and ML technologies and translate them into mission-relevant solutions.

Knowledge, Skills, & Abilities

Deep technical knowledge of modern ML methods and ability to extend them to novel domains.

Excellent written and verbal communication skills; capable of presenting complex ideas to technical and non-technical audiences.

Strong collaborative mindset; experience working in interdisciplinary teams and mentoring peers.

High degree of scientific curiosity and a proactive, self-directed work style.

Joining the CMU team opens the door to an array of exceptional benefits.

Benefits eligible employees enjoy a wide array of benefits including comprehensive medical, prescription, dental, and vision insurance as well as a generous retirement savings program with employer contributions. Unlock your potential with tuition benefits, take well-deserved breaks with ample paid time off and observed holidays, and rest easy with life and accidental death and disability insurance.

Additional perks include a free Pittsburgh Regional Transit bus pass, access to our Family Concierge Team to help navigate childcare needs, fitness center access, and much more!

For a comprehensive overview of the benefits available, explore our Benefits page.

At Carnegie Mellon, we value the whole package when extending offers of employment. Beyond credentials, we evaluate the role and responsibilities, your valuable work experience, and the knowledge gained through education and training. We appreciate your unique skills and the perspective you bring. Your journey with us is about more than just a job; it's about finding the perfect fit for your professional growth and personal aspirations.

Are you interested in an exciting opportunity with an exceptional organization?! Apply today!

Location

Arlington, VA, Pittsburgh, PA

Job Function

Software/Applications Development/Engineering

Position Type

Staff - Regular

Full Time/Part time

Full time

Pay Basis

Salary

More Information:

- Please visit **"Why Carnegie Mellon"** to learn more about becoming part of an institution inspiring innovations that change the world.
- Click here to view a listing of employee benefits
- **Carnegie Mellon University is an Equal Opportunity Employer/Disability/Veteran**.
- **Statement of Assurance**

Carnegie Mellon University does not discriminate and Carnegie Mellon University is required not to discriminate in admission, employment, or administration of its programs or activities on the basis of race, color, national origin, sex or handicap in violation of Title VI of the Civil Rights Act of 1964, Title IX of the Educational Amendments of 1972 and Section 504 of the Rehabilitation Act of 1973 or other federal, state, or local laws or executive orders.