Machine Learning Engineer - Autonomy Lab

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Type: Full-Time
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Category: Software Engineer/Programmer
Military

What We Do

At the SEI AI Division, we conduct research in applied artificial intelligence and the engineering questions related to the practical design and implementation of Artificial Intelligence (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 (ML) 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, and collaborative? Do you enjoy doing meaningful and complex work? Are you interested in making a difference by bringing innovation to government organizations and beyond? Apply to join our team today!

Position Summary:

As a machine learning engineer in the AI for Autonomy Lab, you will identify, shape, apply, conduct, and lead engineering research that matches critical U.S. government needs. The AI for Autonomy Lab researches and demonstrates the application of AI-related technologies for improving the performance of autonomy systems.

Duties:

Solution Development: You'll work with and lead interdisciplinary teams to turn research results into prototype operational capabilities for government customers and stakeholders.

Hands-on Prototyping: You'll conduct and lead novel prototyping in applied artificial intelligence with a focus on machine learning in autonomy and uncrewed systems (multi-domain).

Strategy: You'll work with AI Division leaders and colleagues to plan, develop, and carry out an overall research and engineering strategy, and to influence the national research and engineering agenda regarding future technology.

Collaboration: You'll actively participate on teams of software developers, researchers, designers, and technical leads. You'll build relationships and collaborate with researchers, government customers, and other stakeholders to understand challenges, needs, possible solutions, and research and engineering directions.

Mentoring: You'll contribute to improving the overall technical capabilities of the team by mentoring and teaching others, participating in design (software and otherwise) sessions, and sharing insights and wisdom across the SEI AI Division.

Requirements:

- BS in Computer Science or related discipline with eight (8) years of experience; MS in the same fields with five (5) years of experience; PhD in Computer Science with two (2) years of experience.
- You must be able and willing to work onsite at an SEI office in Pittsburgh, PA or Arlington, VA 5 days per week.
  Flexible to travel to other SEI offices, sponsor sites, conferences, and offsite meetings on occasion. Moderate (25%) travel outside of your home location.

  You will be subject to a background investigation and must be eligible to obtain and maintain a Department of War security clearance.

Knowledge, Skills, and Abilities:

Deep Technical Knowledge: You have performed extensive research or engineering activities in applied machine learning and artificial intelligence. You have worked with tools, techniques, algorithms, software, and programming languages for deep learning, reinforcement learning, statistics, sensors and sensor fusion, planning, computer vision, or related areas. In addition, you have demonstrated applying systems engineering principles and collaborated across multi-disciplinary project teams. You have supported multiple phases of the engineering lifecycle and understand the requirements for successful deployment and operation of complex systems.

Machine Learning: You have profound understanding of machine learning principles and have experience in applying machine learning techniques to real-world problems, showcasing a track record of successful implementations. You have designed and implemented complex machine learning functions and architectures tailored to specific autonomous systems. You are familiar with simulation environments and their role in training and testing machine learning models.

Robotics & Autonomy: You have a strong understanding of robotics principles and design techniques for air, sea, or land-based vehicles. You have experience applying machine learning within these domains and understand the related implications and challenges. Your experience includes areas such as sensor fusion, navigation, object search/tracking, collision avoidance, multi-agent collaboration, and human-machine teaming.

Test & Evaluation: You have designed and conducted test and evaluation activities for ML components to assess operational fit and readiness. You have experience working with model experimentation software, such as MLFlow or Weights & Biases for rigorous model development and selection.

Applied Full-Stack Implementation: You have strong development experience and can design and implement software and systems resources for packaging and managing requirements for AI and ML prototypes. You frequently use tools like Docker to manage software resources and pipeline orchestration. You may have experience building applications in cloud platforms (Azure, AWS, Google Cloud Platform).

Communication and Collaboration: You have strong written and verbal communication skills and can interact collaboratively and diplomatically with customers and colleagues. You grasp the big picture, direction, and goals of an effort while focusing great attention to detail. You can present complex ideas to people who may not have a deep understanding of the subject area.

Dedication: You can meet deadlines while multi-tasking-sometimes under pressure and with shifting priorities.

Creativity and Innovation: You are creative and curious, and you are inspired by the prospect of collaborating with premier members of the technical staff and other visionaries at Carnegie Mellon and other universities and organizations. You quickly learn new procedures, techniques, and approaches. You are forward-looking and can connect research and engineering with practical challenges.

Knowledge and Learning: You possess broad technical interests along with a deep knowledge of a particular field such as machine learning, autonomy and adaptive systems, or data analytics.

Preferred Experience:

Thought Leadership and Publications: You have a track record of synthesizing lessons learned from research or engineering activities for publication. You have a reputation for the highest level of research and engineering integrity. You have demonstrated contributions and have published research, code (e.g., models, data, software applications), or technical perspectives.

Familiarity with Emerging Trends and Opportunities: You are familiar with technical challenges and emerging trends in computing and information science, and you are aware of opportunities in industry and government.

Technical Leadership: You have led technical projects and have experience collaborating across research teams and mentoring other researchers.

Proposals: You have formulated and delivered successful research and engineering proposals to funding agencies and led the resulting projects.

Government Projects: You have worked or are familiar with Navy, Marine, Air Force, Army, Space Force, DARPA, IARPA, Service Labs, or other government research sponsors.

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.

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