JAMES MONTGOMERY
PRINCIPAL SOFTWARE ENGINEER

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James Montgomery is a contracted Software Engineering Lead at MIT Lincoln Laboratory with a combined Computer Science and Electrical Engineering background. He has 14 years of industry experience in Software design and development, with broad technical experience in Software Engineering and domain-specific knowledge in radar and real-time systems. He has extensive experience with software process, management, and leading development teams. He also has experience with electrical engineering, artificial intelligence, and software-defined radio.

AREAS OF EXPERTISE

C++   -   Python   -   Java   -   Software Architecture   - Distributed Systems -   DevSecOps
Artificial Intelligence   -   Language Models   -   Linux   -   High Performance Computing
Real-time Systems   -   Github   -   SQL   -   Containerization   -   Project Management
DDS   -   Radar   -   Digital Signal Processing

SECURITY CLEARANCE

Holds a **Top Secret SCI** Security Clearance

WORK EXPERIENCE

MIT Lincoln Laboratory | Lexington, MA   **2016 - Present**
Software Engineering Lead

Contracted Software Engineering lead for the Over the Horizon Radar Portfolio of Group 33, Advanced Sensors Systems and Testbeds, at MIT Lincoln Laboratory. Principal Software Engineer for many large-scale government programs in the missile defense space spanning a variety of domains, with a focus on Over the Horizon Radar. Responsible for performing software design and system architecture for radar systems while providing daily leadership for a software development team to meet program goals. Responsible for interacting with government sponsors and stakeholders, administering technical briefs, and serving as a functional lead for the portfolio. Highly involved in daily technical engineering, retaining one of the highest software commit counts at the Laboratory. Architect of Lincoln Laboratory's "Horizon" software suite, a government platform for real-time operation of Over the Horizon Radar systems.

MIT Lincoln Laboratory | Lexington, MA   **2011 -2015**
Assistant Engineering Staff - Software Engineer

Served as a Software Engineer, designing and implementing the ROSA II software framework used to control the operation of specific radar and optical sensors. Required daily use of C++, Java, and Python development on Linux-based systems and collaboration with other developers and specialists from within the missile defense community. Held responsibility for designing and developing software capabilities as requested by sponsors, coordinating releases and deployments, and performing technology transfer of software to sponsors upon completion of development. This included management of software process, conducting formal code reviews, and utilizing continuous integration. Auxiliary responsibilities included supporting missions by providing technical support and analysis, in addition to international travel to deploy and integrate remote systems.

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EDUCATION

M.S. COMPUTER SCIENCE   2021 - 2024
Georgia Institute of Technology – GPA 4.0
Concentration: Interactive Artificial Intelligence

B.S. ELECTRICAL ENGINEERING AND COMPUTER SCIENCE   2007 – 2011
Worcester Polytechnic Institute
Dual Major

VALEDICTORIAN   2003 – 2007
North High School

SKILLS

TECHNICAL SKILLS   C++ | Python | Java | Linux | Software Architecture | Project Management |
Distributed Systems | RTI DDS | Containerization | Qt | DevSecOps | Web Design | Javascript | Node | SQL | JSON |
Github | VS Code | JetBrains | Wordpress | Digital Signal Processing | High Performance Computing | GPU
Development | Artificial Intelligence | Language Models | Adobe | Android | Unit Testing | Radar | Mentoring |
Mathematics

OPEN SOURCE

Ollama-hpp   2024 - Present
Github | https://github.com/jmont-dev/ollama-hpp

Author of the C++ bindings for Ollama, one of the largest Open-Source AI projects on Github. Created a series of
modern, header-only bindings for the Ollama API that allow simplified access to language models from modern
variants of C++.

Connext DDS   2018 - Present
Real-time Innovations, Inc. | https://www.rti.com

Contributor to design discussions and feature planning within the RTI Connext Data Distribution Service (DDS)
implementation. Responsible for serialization performance improvements and feature design in the RTI Connector
library.

LEADERSHIP & ACHIEVEMENTS

Laboratory Excellence Award - Artic Expeditionary Radar Program   2020
MIT Lincoln Laboratory | Lexington, MA

Laboratory Excellence Award - Allegro Radar Program   2022
MIT Lincoln Laboratory | Lexington, MA

Contractor Excellence Award - James Montgomery   2018, 2022, 2023, 2024
MIT Lincoln Laboratory | Lexington, MA

NOTABLE UNCLASSIFIED WORK

HORIZON SOFTWARE SUITE   2018 - Present
MIT Lincoln Laboratory | Lexington, MA

Software Architect and Principal Software Engineer leading the development of Horizon, a government-funded software suite for operation of HF and OTHR systems. Includes real-time signal processing capability, command and control for radar operations, tools for scientific data collection, and diverse hardware interfaces for HF digital receivers. Originally developed in 2018 to support the Transportable Over the Horizon Radar System, this software has grown into a generalized suite of HF capability spanning nearly 7000 commits and half a million lines of code. Ongoing development includes the addition of modern tracking capabilities and automated frequency selection to support the Homeland Defense initiative.

TRANSPORTABLE OVER THE HORIZON RADAR   2018 - Present
MIT Lincoln Laboratory | Lexington, MA

Core member of the team at Lincoln Laboratory involved in the initial design and implementation of the Transportable Over the Horizon Radar (T-OTHR) System. Involved in system design, receiver acquisition and testing, software architecture and design, and field testing and integration. Supported seven distinct fielded missions with the T-OTHR, each involving unique hardware permutations and experimental objectives.

UNCLASSIFIED PROGRAM WORK

HOMELAND DEFENSE RADAR SYSTEM   2024 - Present
MIT Lincoln Laboratory | Lexington, MA

Principal Software Engineer leading the software design and implementation for the Wintertime System. Responsible for modernizing the existing Horizon software suite to add next-generation GPU signal processing, time-series data storage and data collection, and automated tracking and frequency selection techniques.

ARCTIC EXPEDITIONARY RADAR SYSTEM   2019–2020
MIT Lincoln Laboratory | Grand Forks, ND

Software Engineering Lead for a large-scale Over the Horizon Radar system designed to assess the impact of the Aurora Borealis on radar performance. Responsible for performing software architecture and design and leading a development team to construct a real-time distributed system for operating the radar.

OPERATIONAL OTHR RADAR SYSTEM   2016 – 2018
MIT Lincoln Laboratory | Lexington, MA

Software Engineering Lead for a large operational Over the Horizon Radar System. Responsible for software architecture and design in addition to leading a development team. Requirements included interfacing with government sponsors, designing individual features, organizing a team with software process, and performing software implementation and field integration.

AIRBORNE OPTICAL PLATFORM (ABP)   2014 – 2015
MIT Lincoln Laboratory | Lexington, MA

Software Engineer serving on the Airborne Platform (ABP) program at MIT Lincoln Laboratory. Developed real-time applications for control of an optical sensor and helped organize a development team of engineers to meet the goals of a Level 1 program.

REAGAN TEST SITE (RTS) RADARS   2011 – 2014
MIT Lincoln Laboratory | Lexington, MA

Software Engineer serving on the ROSA II modernization program for the RTS radar platforms in the Kwajalein Atoll. Contributed to overall system architecture as well as initial multiband frequency capability, scanning, INS compensation, and subsystem integration. Sensors involved included MMW, ALTAIR, ALCOR, and several mobile platforms.