MICHAEL MANN

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SUMMARY

Software Developer with a strong background in embedded systems, network communication, and industrial automation. Experienced in architecting, developing, and maintaining complex software solutions, including EtherNet/IP protocol stacks, Automated Guided Vehicle (AGV) systems, and enterprise automation technologies. Made 1,900+ contributions to Wireshark, enhancing protocol analysis and debugging capabilities. Developed high-performance software for Automated Guided Vehicles (AGVs) for JBT, optimizing industrial automation. Advanced intelligent automation, Robotic Process Automation (RPA), and industrial protocol implementation for Pyramid Solutions, driving innovation in automation. Proficient in C/C++, C#, and embedded platforms (Windows, Linux, VxWorks), with a recent focus on Python to expand into modern software development roles. Passionate about mentoring teams, improving software standards, and driving automation innovations across industries.

WORK EXPERIENCE

VEHICLE SOFTWARE LEAD (R&D) **02/2018 to 01/2025**
JBT CORPORATION **Chalfont, PA**
JBT is a leading provider of Automated Guided Vehicle (AGV) systems, delivering automation solutions since the mid-1980s. With AGV installations across automotive, food and beverage, healthcare, packaging, and consumer goods industries, JBT continues to drive advancements in industrial automation with a workforce of 1,000–5,000 employees.

- Developed and maintained software for Automated Guided Vehicles (AGVs), improving system functionality, diagnostics, and integration with hardware components.
- Designed and implemented a C# desktop application using the MVVM pattern, enhancing vehicle file management and diagnostic capabilities.
- Refactored vehicle software for improved modularity, applying object-oriented principles to reduce technical debt, enhance maintainability, and streamline development.
- Collaborated with cross-functional engineering teams, working closely with electrical, mechanical, and systems engineers to develop and refine AGV software functionality.
- Led mentorship initiatives for junior developers, providing guidance on software development best practices, debugging techniques, and modern version control workflows.
- Integrated and debugged custom protocol interfaces, enabling seamless communication between AGV software and batteries, sensors, and other hardware components.
- Championed the adoption of Git and GitHub, driving best practices in version control and workflow improvements across teams beyond just vehicle software.

SENIOR SYSTEM ENGINEER **07/2001 to 02/2018**
PYRAMID SOLUTIONS **Bingham Farms, MI**
Pyramid Solutions is a Detroit-based Intelligent Automation company with over 30 years of experience, specializing in Robotic Process Automation (RPA), business process management, OCR/capture, AI, machine learning, and workflow solutions for large enterprises worldwide. With a team of 51-200 employees, the company delivers cutting-edge automation technologies to drive efficiency and innovation.

- Architected and led development of the industry-leading EtherNet/IP protocol stack, providing full-cycle support, documentation, and onsite training for clients.
- Designed and developed embedded software solutions with a strong focus on network communication, optimizing performance for resource- and CPU-limited devices.
- Developed and tested HMI software for engine control systems, enhancing user interaction and system monitoring capabilities.
- Led multiple embedded development projects, expanding a single successful protocol integration into a multi-developer initiative that streamlined industrial automation solutions.
- Collaborated with industry experts to refine and enhance industrial protocol standards, publishing protocol specification improvements and contributing to whitepapers.
- Created PLC demos and programmed PLCs for testing embedded devices, ensuring compliance and reliability for industrial applications.
- Mentored and trained junior developers, promoting best practices in software development, debugging techniques, and programming methodologies.

TECHNICAL SKILLS

- **Programming Languages:** Primary: C/C++, C# (including WPF) and Secondary: Python, Perl, Lua
- **Platforms & Development Environments:** Windows and Linux application development, embedded development on Windows, Linux, VxWorks (Intel & PowerPC CPUs), various IDEs including Visual Studio (versions 6 through 2022), Visual Studio Code, Eclipse (basic & custom)
- **Development Tools:** Version Control: Git (TortoiseGit), SVN; Issue Tracking: JIRA, GitHub, Gerrit, GitLab, Bugzilla; Build & Documentation: CMake, GNU Make, NMake, Doxygen
- **Networking & Protocols:** Primary: EtherNet/IP, CIP, Modbus, J1939 (CAN), proprietary OSI Layer 7 protocols; Secondary: TCP/IP, DTLS/SSL, CAN, Serial, FTP, TFTP, CIPSafety, DHCP, SMTP, SNTP
- **Software Development Methodologies:** Experience with Agile and Waterfall

PROJECT EXPERIENCE

CORE DEVELOPER | **WIRESHARK** | July 2012 – Present

Wireshark is the world's leading network protocol analyzer, used for troubleshooting, analysis, development, and education

- Created protocol dissectors from scratch, based on provided specifications, ensuring accurate packet analysis across a wide range of protocols
- Reviewed and approved code submitted by other developers, ensuring adherence to best practices and maintaining the integrity of the codebase.
- Worked with numerous abandoned patches, revived and integrated them into the main source, improving functionality with minimal additional work.
- Enhanced code quality by conducting retroactive code reviews of dissector code, resulting in cleaner and more maintainable contributions.
- Refactored parts of the dissection engine, optimizing the separation between business logic and UI layers to facilitate a smoother transition from GTK to Qt GUI.
- Developed Perl scripts to enforce quality coding standards, automating checks to ensure all contributions met set criteria for consistency and readability.
- Contributed over 1,900 commits, significantly advancing the project's capabilities and stability.

DEVELOPER | CARCASSONNE ON TABLETOP SIMULATOR | December 2021 – Present

Carcassonne is a strategic tile-placement game, and this project focused on enhancing its digital adaptation using Lua scripting for automation, modularity, and analytics.

- Enhanced Lua scripting using Atom IDE, refactoring and optimizing code to improve efficiency, maintainability, and readability.
- Modularized the codebase, separating expansion rule sets into individual files to improve organization, scalability, and ease of updates.
- Developed automation features, reducing manual player input by implementing event-driven scripting, enhancing gameplay flow and rule enforcement.
- Integrated real-time game statistics tracking, providing analytics on player strategies, move efficiency, and decision-making patterns.
- Optimized performance and debugging, identifying and resolving script execution bottlenecks to ensure smooth gameplay and reduced latency.

STUDENT | UDEMY – 100 DAYS OF CODE: The Complete Python Bootcamp | January 2025 – March 2025

Completed an intensive 100-day Python bootcamp to strengthen programming skills, explore automation, and experiment with AI-driven problem-solving.

- Learned core Python concepts, including object-oriented programming (OOP), data structures, and algorithmic thinking through hands-on exercises.
- Practiced problem-solving and debugging, working through coding challenges and troubleshooting errors to improve logical thinking.
- Explored AI-assisted coding, comparing my solutions with responses from Google's Gemini AI to understand different approaches and optimization techniques.
- Built small automation projects, using Python to handle file operations, process data, and interact with APIs to gain practical experience.

EDUCATION

BACHELOR OF SCIENCE IN COMPUTER SCIENCE

CASE WESTERN RESERVE UNIVERSITY | Cleveland, OH