Martin Yanev

Software Engineer

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SUMMARY

Martin Yanev is a highly skilled software engineer with nearly a decade of experience in AI, embedded systems, networking, and software development, testing, and integration. He specializes in Python and C++ with expertise in an AI/LLM applications & agents, automation frameworks, CI/CD pipelines and firmware development. Martin is an expert in Python including libraries such as PyTorch, Django, Pandas, Flask and PyTest leveraging them for test automation, data processing, and AI development. Martin is also the author of the book Building *AI Applications with OpenAI APIs* and a computer science professor with 30 software development courses and over 100 projects on GitHub.

WORK EXPERIENCE

SOFTWARE ENGINEER • WATERS CORPORATION • UNITED STATES

(February 2022 – Present)

Firmware Developer 2024 – Present

- Design and implement embedded systems software for medical instrumentation with high accuracy using **Python** and **C++.**
- Develop Dilution and Arc HPLC Sample Manager firmware using **C/C++** embedded code, **VHDL/Verilog FPGA** logic for syringe control, completing >80 tickets ahead of schedule and bridging CPU2K/CPU3K compatibility.
- Built first ever Windows graphical firmware loader using **Pandas**, **Google Protobuf, BeautifulSoup**, **QT GUI** and firmware utilities, replacing **Linux** command-line tool and becoming company standard for firmware updates.
- Designed and implemented **API** message structures using **Google Protocol Buffers**, generating optimized **.proto** schema files and corresponding **.h** headers from existing **XML**-based data structures for efficient cross-system communication.
- Developed **RST**/graph documentation generator using fine-tuned **PyTorch GPT**-like model on >600K-line internal codebase, **OpenAI APIs**, **Python**, and **Sphinx** integration, saving months of manual work.
- Earned top productivity bonus by leading peers with **~1,200 commits** and **~190,000 lines of code** contributed (highest in team per GitHub metrics).

Backend Developer 2022 – 2024

- Designed and deployed an autonomous **AI agent** using **LangChain**, **OpenAI GPT-5o**, and **Pinecone** vector database to automatically generate **PyTest** integration and firmware validation tests, later migrated the solution to a secure enterprise architecture leveraging **Azure AI Studio**, **Azure OpenAI Service** (GPT models), and **Azure AI Search** vector store to comply with company security policies.
- Designed and synchronized Brooks robotic plate handler with Sample Manager FTN using **telnet** routing, Waters iSym protocol, and custom **Python** orchestration doubling throughput to 576 samples and eliminating manual plate handling.
- Diagnosed firmware update failures with **Python** tools using **OpenCV** image processing and scripting for screen-state auto-reboot and version toggling.

- Built Empower data validation tool using **Python**, **pandas**, and **numpy**, automating anomaly detection, real-time pattern flagging, and report generation.
- Build software integration tests with **Python** using **PyTest** testing framework.
- Used Linux and bash to set-up **VSphere** virtual machines and build test execution scripts.
- Actively contributed to the full software development lifecycle by reviewing requirements, managing risks, maintaining **Jira** traceability, setting up **Scrum boards**, assigning/prioritizing tickets, and driving sprint delivery for instrumentation projects.
- Supported **Jenkins** pipelines and **Artifactory** for **CI/CD** and **Git/Bitbucket** for version control.

ADJUNCT PROFESSOR • FITCHBURG STATE UNIVERSITY • UNITED STATES

(February 2023 – Present)

Instructor at Fitchburg State University, specializing in **AI Applications**, Machine Learning, Data Communications Networking, Operating Systems, Advanced **Mathematics**, and **Python** Programming.

- Developed curriculum and taught students' practical applications of AI models, focusing on leveraging **AI Technology** for real world projects.
- Facilitated hands-on learning experiences in data communications and networking, covering protocols, network architectures, security and the OSI model.
- Guided students in understanding advanced mathematical concepts relevant to AI and networking fields, fostering critical thinking and problem-solving skills.

SOFTWARE ENGINEER • IVY TECHNOLOGY • UNITED STATES

(May 2021 – February 2022)

- Worked for Cisco on C9200, C9300, Nexus and ASR A900 product families.
- Directed and coordinated engineering activities concerned with development, procurement, installation, and calibration of instruments, equipment, and control devices required to test, record, and reduce test data.
- Developed and refined a **Python** software for each **Cisco** product family.
- Built and managed network devices using **Cisco IOS** and **Linux**
- Support production with over 200 failure analysis and software debugging.

INSTRUCTOR • UDEMY • UNITED STATES

(August 2020 – June 2023)

- Designed and published four programming courses on **Java**, **Python** and **C++.**
- Achieved more than 300,000 student enrollments.
- Gained over 4000 reviews of 4.3 on a scale of 5.
- Built a community of over 100000 students on YouTube and Facebook.

SOFTWARE ENGINEER • INDRA SYSTEMS • UNITED KINGDOM

(September 2018 – January 2021)

- Created and executed more than 1000 tests for Airspace Control Systems.
- Administrated more than 20 **Linux** based **embedded** systems, constructing the air traffic management system.
- Liaised with company partners - ALTRAN, NATS PM to solve critical HMI definition and Tactical Conflict Detection testing challenges.
- Used **Python** and **C++** scripts to develop and integrate system components.
- Performed functional testing of the future UK Air Traffic Management System SRS and achieved 95% pass rate on FAT (Functional Acceptance Activity) with the client.

QUALITY ENGINEER • LUFTHANSA TECHNIK • BULGARIA

(October 2016 - May 2017)

- Participated on over 15 authorization boards, suspended and revoked company authorizations using **SAP**.
- Conducted more than 10-point spot checks for deficiency identification.
- Solved nearly 10 quality investigations for accident, incident and warranty occurrences.
- Executed hazard identifications and liaised with Aviation Authorities and Customer Representatives on quality issues, audits and queries.

PUBLIC TECHNICAL PROJECTS

PRACTICE TEST APP

Git: https://github.com/martinyanev94/PracticeTestApp

• Built a **Django** project to create practice tests using **OpenAI** APIs.

• Implemented **Stripe** payment system and **Azure** deployment.

AI APPLICATIONS

Git: https://github.com/PacktPublishing/Building-AI-Applications-with-ChatGPT-APIs

• Built 10 **AI Applications** on **Python** using libraries such as **Flask**, **Django**, **Pandas** and more.

• Deployed on **Azure Cloud** and integrated monetization and subscription services**.**

BOOK TO COURSE AI AGENT

Git: https://github.com/martinyanev94/BookToCourse

Publication: https://www.researchgate.net/publication/390609330

• Developed agenic Python application to convert static textbooks into long-form educational videos using **AI Assistants**, **DALL-E**, **gpt-5o** and stable diffusion for text processing, script generation, and visuals.

• Implemented book segmentation, code extraction, and video assembly with **MoviePy** to create structured tutorials featuring slides, graphical illustrations, and live coding demonstrations.

MASKED SELF-ATTENTION

Git: https://github.com/martinyanev94/masked-self-attention

• Implemented masked self-attention mechanism from scratch in **Python** to demonstrate core Transformer architecture concepts.

• Developed matrix-based attention computation (Q, K, V, softmax, masking) to illustrate autoregressive sequence modeling.

SCHEMA-VALIDATED GEMINI & OPENAI API RESPONSES

Git: https://github.com/martinyanev94/easyaipy

Publication: https://www.researchgate.net/publication/390048937

• Developed a **Python** public library to enforce schema validation for **OpenAI** and **Gemini API** responses, improving reliability and structured output handling.

• Implemented type-safe **JSON** parsing, prompt augmentation, and multimodal support using **Python**, **HTTPX**, and **Pillow**.

EDUCATION

NEW ENGLAND COLLEGE • JAN. 2025 – DEC. 2025 • UNITED STATES
Master of Science: Data Science, GPA: 3.8

FITCHBURG STATE UNIVERSITY • AUG. 2020 – DEC. 2021 • UNITED STATES
Master of Science: Computer Science, GPA: 3.8

CRANFIELD UNIVERSITY • GRADUATED SEP. 2018 • UNITED KINGDOM
Master of Science: Aerospace Dynamics, GPA: 3.5

TECHNICAL UNIVERSITY OF SOFIA • GRADUATED AUG. 2017 • BULGARIA
Bachelor of Science: Aeronautical Engineering, GPA: 3.5

TECH STACK

Experienced:
Linux ● C++ ● Python ● MatLab ● AI APIs LLM ● JIRA ● SAP ● Flask ● API ● TCP/IP ● HTML5 ● JavaScript ● PostgreSQL ● Jenkins ● CUDA ● Django ● Triton ● PyTorch ● LangChain ● Pinecone ● Azure ● AWS

PERSONAL
Productive ● Assertive ● Public Speaker ● Team Player ● Motivator ● Organized ● Creative

MISCELLANEOUS

- Author of the bestseller “ Building AI Applications with OpenAI APIs ” with Packt Publishing
- Published over 30 software development courses
- Reviewed over 15 computer science books as a technical reviewer

EUROPEAN ERASM STIPEND
• Received $3000 from the European Union for Network Technician internship.