GIDEON ADJEI

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Kumasi, Ashanti Region - 03220, Ghana

Summary

Aspiring computer engineer with strong skills in digital hardware design, Verilog programming, ARMv7 assembly, and low-level systems development. Passionate about innovative projects at the intersection of computer architecture, Processing-In-Memory systems, and VLSI design, aiming for impactful research and practical engineering solutions.

Education

- **Kwame Nkrumah University of Science and Technology** *January 2021 - August 2024*
  BSc. Computer Engineering Kumasi, Ghana
  – GPA: 3.81/4.00
- **Pope John SHS and Seminary** *September 2017 - June 2020*
  Secondary Education Koforidua, Ghana
  – Aggregate: 10

Experience

- **Kwame Nkrumah University of Science and Technology** *October 2024 - Present*
  Teaching Assistant Kumasi, Ghana
  – Led weekly lab sessions and tutorials for 200 undergraduate students (80 per session)
  – Assisted in grading assignments and exams
  – Conducted analysis of student performance across tests, identified learning gaps, and implemented strategies leading to a 20% improvement in scores.
  – Conducted problem-solving sessions
- **Freelance** *December 2024 - Present*
  YouTube Educator Remote
  – Created and published educational videos focused on C programming fundamentals.
  – Covered topics like debugging techniques and file handling in C.
  – Helping beginners understand low-level programming through practical examples.
  – Actively developing new content and growing audience reach.

Projects

- **USB PHY Design in Verilog** *July 2025 - Present*
  Tools: Verilog, ModelSim, Quartus, Digital Oscilloscope
  – Designing and simulating a USB Physical Layer transceiver entirely in Verilog.
  – Implemented NRZI encoding/decoding, bit-stuffing, sync pattern detection, and USB line-state management.
  – Project targets synthesizability on FPGA while ensuring compliance with USB 1.1 protocol specifications.
- **ARMv7 Assembly Programming** *March 2025 - Present*
  Tools: ARMv7, QEMU, Raspberry Pi, Assembly Language
  – Developed low-level programs in ARMv7 Assembly for arithmetic operations, memory manipulation, and control flows.
  – Built routines for memory-mapped I/O and embedded hardware interactions.
  – Gained deeper understanding of pipeline hazards, performance tuning, and embedded optimization.
- **Custom Printf: Custom printf Implementation in C** *December 2023 - February 2024*
  Tools: C, Makefile, Git, Github, Ubuntu
  – Implemented a simplified printf using C's variadic arguments.
  – Supported format specifiers (%d, %s, %c, %x, etc.) with proper parsing and formatting.
- **Custom Shell: Unix Shell Implementation in C** *December 2023 - February 2024*
  Tools: C, Makefile, Git, Github, Ubuntu
  – Built a minimal shell supporting command execution, piping, redirection, background jobs, and built-in commands.
  – Implemented process handling with fork(), execvp(), waitpid(), and signals.
- **PilOS: Custom Operating System (in development)** *January 2025 - Present*
  Tools: C, NASM, QEMU, GRUB, x86 architecture
  – Developing a custom x86 OS with multiboot-compliant bootloader and protected-mode kernel.
- **Cryptographic C Library for Blockchain (in development)** *January 2025 - Present*
  Tools: C, NASM, QEMU, GRUB, x86 architecture
  – Developed a C library implementing essential cryptographic functions for blockchain applications, including hashing and digital signatures

Research

[R.1] Gideon Adjei (2024). **Review of Homomorphic Encryption**. Unpublished review on *Homomorphic Encryption*, conducted as part of Secure Network Systems Departmental Project, Department of Computer Engineering, KNUST.

Skills

- **Programming Languages:** C, C++, Python, Verilog, ARMv7 Assembly, MATLAB, Javascript
- **Web Technologies:** MongoDB, FastAPI, Vercel, Render
- **Database Systems:** Postgres, SQLite
- **Cloud Technologies:** Render, Vercel
- **DevOps & Version Control:** Git, GitHub, GitLab, Docker
- **Specialized Area:** Embedded Systems, ARMv7 Assembly, Verilog, Digital Design, USB PHYs, Controller Design
- **Debugging:** GNU GDB, Valgrind
- **Research Skills:** Literature review, critical analysis, MATLAB, Python for data analysis

Honors and Awards

- **College of Engineering Excellence Awards** *June 2022*
  KNUST
  – Awarded to students with cumulative average above 75.00.

- **Competition Achievement** *March 2025*
  HDLBits, Verilog Practice Rank
  – Completed all 182 Verilog exercises on HDLBits, mastering combinational logic, sequential design, FSMs, and hierarchical digital systems.
  – Ranked in the highest global performance category, demonstrating practical skills in digital logic design.

Leadership Experience

- **Math and Science Club Advisor** *2019 - 2020*
  Pope John Senior High School and Minor Seminary
  – Mentored students in science fairs, math competitions, and STEM workshops.
  – Supported activities enhancing problem-solving and critical thinking.

Professional Memberships

- **RISC-V International**, Membership: Individual Member *June 2025 - Present*

Additional Information

Languages: English (Fluent), Akan (Fluent), French (Basic)
Interests: Embedded systems, Systems programming, Football, Mathematical problem-solving

Referees

1. **Prof. Emmanuel Kofi Akowuah**
   Associate Professor, Computer Engineering
   KNUST
   Email: ekakowuah.coe@knust.edu.gh
   Phone: +233-20-996-5679
   Relationship: Project Supervisor

2. **Dr. (Mrs.) Theresa-Samuelle Maame Atwemaah Adjaidoo**
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   KNUST
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   Relationship: Supervisor

3. **Dr. Eric Tutu Tchao**
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   KNUST
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   Phone: +233-24-987-3747
   Relationship: Tutor