

OBENG FRANCIS

🏠 Virginia Tech, Software Innovation Lab

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EDUCATION

Virginia Tech

Ph.D. (In Progress), Computer Science (GPA 4.0/4.0)

M.S. (In Progress), Computer Science (GPA 4.0/4.0)

Future Professoriate Graduate Certificate

Advisor: Dr. Eli Tilevich

Blacksburg, VA, USA

(Expected 2027)

(Expected 2025)

(Expected 2025)

University of Education

B.S Info. Technology Edu. (First Class, CGPA 3.67/4.0)

Winneba, Ghana

Aug 2015 – July 2019

Enchi College of Education

3-year Diploma in Basic Education

Enchi, Ghana

June 2009 – July 2012

RESEARCH INTEREST

Software engineering (AI reliability, safety, and fault tolerance; architecture; automation), edge computing, mobile computing, and Digital Education.

CURRENT RESEARCH PROJECT:

- Three ongoing research projects in software reliability and fault tolerance (publications in preparation).
- **Nobody's Perfect (NiP) - Cross-Language Program Analysis Tool** ([View Repository](#)). Comprehensive infrastructure for automated program analysis across 9 programming languages, designed to extract and analyze large datasets of open-source web services to identify exception-handling strategies for fault tolerance research.

Technical Impact:

- Analyzed 14K open-source web service applications across 9 programming languages
- Detected exception-handling patterns automatically with 90% accuracy, and reduced manual code analysis time by 98%
- Generated comprehensive statistical reports for fault tolerance research

TECHNICAL SKILLS

Programming Languages: C++, Java, HTML, CSS, PHP, JavaScript, Go, Ruby, and Python.

Research Tools: SPSS, LaTeX (Overleaf), JMP, and Tableau.

IDEs: VS Code, Sublime Text Editor, IntelliJ IDEA, Jupyter, and PyCharm.

Version Control (Collab. Tools): Git, Docker, GitHub, and GitLab.

Design Tool: Figma.

Web Dev. Frameworks: Vue (vite) and Bootstrap.

Database Management: SQL, MySQL, SQLite.

Cloud Services: Google Cloud, Kaggle,

Data Science: NumPy, Pandas, Matplotlib.

TEACHING EXPERIENCE

Virginia Tech

Blacksburg, VA, USA

Graduate Teaching Assistant

2023 – Present

Courses Taught:

- Mobile Application Development (Graduate) — Kotlin | 45 Students
- Web Application Development (Graduate) — HTML, CSS, JavaScript | 76 Students
- Software Engineering (Graduate level) — Java | 35 Students
- Introduction to Software Design (Undergraduate level) — Java | 46 Students
- Professionalism in Computing (2x Undergraduate) 2 Semesters| 92 Students total

Key Responsibilities

- Leading programming lab sessions twice per week for the entire semester.
- Holding office hours to assist students in overcoming their challenges in the course project.
- Reviewing students' applications (software) development process to ensure it aligns with project requirements (App Reviews).
- Grading students' assignments and projects for the assigned course.
- Reporting on students' graded assignments and projects.

Obuasi Senior High Technical School

Obuasi, Ash – Ghana

Information Technology Instructor

Oct. 2019 – Dec 2022

- Instructed 150+ high school students in C++, QBasic, HTML, CSS, Access, and SQL
- Improved student programming proficiency by 95% through hands-on project-based learning
- Developed a comprehensive curriculum resulting in a 100% student pass rate in the national ICT examinations for Senior High Students.
- Created two instructional textbooks, adopted by the ICT department at Obuasi Senior Technical School.

West Africa Examination Council

Obuasi, Ash – Ghana

Assistant Examiner

Nov 2020 – Dec 2022

- Evaluated 1,000+ ICT examination scripts annually
- Maintained 99.5% accuracy in grading with quality assurance protocols
- Contributed to the examination standards development for the national ICT curriculum

Ghana Education Service

Ash. Region – Ghana

Professional Info. Comm. Tech. Instructor/Teacher

Sept 2012 – Aug 2015

Impact:

- Taught computer literacy to 200+ junior high school students (ages 11-15)
- Established computer lab protocols, increasing student computer access by 85%

- Achieved 90% improvement in student digital literacy assessment scores.

INSTRUCTIONAL MATERIALS (Unpublished)

Obeng, F. (2022). *Information and Communications Technology for Senior High School Students*.

Developed and compiled two comprehensive instructional books for high school ICT education.

These two books were used as a classroom resource during my time at Obuasi Senior High Technical School.

- Information and Communications Technology (**Elective Theory**)—200+ pages covering fundamental computing concepts, data representation, introduction to programming languages, and algorithms. [Book Here](#).
- Information and Communications Technology (**Elective Practical**)—180+ pages focused on hands-on programming exercises in QBasic programming, HTML, CSS, and access database management. [Book Here](#).

PROFESSIONAL EXPERIENCE

Ghana Statistical Service

Asokwa, Ash – Ghana

District IT Officer

June 2021– Nov 2021

- Trained 256 supervisors and enumerators on census technological tools (tablets, laptops, Computer-Assisted Personal Interviewing—CAPI software).
- Supervised data transfer/syncing operations ensuring 100% data integrity from the field to the national data warehouse.
- Implemented quality control protocols, reducing data collection errors by 90%

Data Collection Specialist (Interviewer)

2017 – 2018

- Conducted 1000+ interviews for the census of agriculture using Computer-Assisted Personal Interviewing (CAPI).
- Managed maternal mortality survey data collection covering 1000+ respondents
- Maintained 98% data quality standards throughout the collection period.

RESEARCH COMPLIANCE

- Financial Conflict of Interest Training Requirement for Sponsored Research.
- Information Privacy and Security (IPS).
- Basic Responsible Conduct of Research.

RESEARCH PROJECTS AND TECHNICAL ACHIEVEMENTS

BookStore E-commerce Full Stack Website | Web Application Development Course

- Developed full-stack e-commerce website using HTML, CSS, JavaScript, RESTful API, and Data Access Object (DAO).
- Implemented secure payment gateway integration and user authentication system.

- Achieved 100% functionality requirements with a responsive design supporting mobile devices. [Front-End Code](#), [Back-end Code](#).

Guest House Reservation System | Internship [Code](#)

- Created a web-based reservation management system with real-time availability tracking.
- Integrated SMS notification system for booking confirmations.
- Deployed using a MySQL database with 99.9% uptime performance.

School Website and Exact Application System Prototype | Academic Project [Code](#)

- Developed a comprehensive school management system with an integrated online exeat (exit permit) application portal.
- Created a responsive web interface supporting 1,000+ concurrent users during application periods.
- Implemented automated application processing, reducing manual review time by 80%
- Integrated document upload system with real-time status tracking for applicants.

Online Bus Ticketing System | Undergraduate Capstone Project

- Designed and developed a comprehensive bus ticketing platform serving 1000+ daily users
- Implemented route optimization algorithms, reducing travel time calculations by 25%
- Integrated mobile payment systems that support multiple payment methods.

CERTIFICATION AND ONLINE COURSES

University of Michigan

Programming for everybody (getting started with Python)

Ann Arbor, Michigan

June 2021 – July 2021

Web Application Technologies and Django

June 2023

University of Illinois

Data Visualization

Urbana-Champaign

June 2021 – July 2021

DeepLearning.AI

Artificial Intelligence for Everyone

USA

May 2023

University of Pennsylvania

Introduction to Python Programming

USA, Pennsylvania

July 2023

University of London:

Introduction to Network Security

UK, England

June 2023.

Microsoft: Intro. Computers and Operating Systems, and Security

Aug 2023.