Dinuka Wickramasinghe

CS Undergraduate

Sri Lanka | General Sir John Kotelawala Defence University
GPA: 3.601

dinukaw2002@gmail.com | +94 76 719 6896

GitHub | LinkedIn

EDUCATION

BSc (Hons) in Computer Science 2023 – Present
General Sir John Kotelawala Defence University, Sri Lanka
GPA: 3.601

G.C.E. Advanced Level – Physical Science Stream 2007 – 2022
Ananda College, Colombo 10

PROFESSIONAL SUMMARY

Motivated Computer Science undergraduate with strong experience in Python, machine learning, agentic AI workflows, and intelligent automation. Proven ability to design production-oriented ML systems, chatbots, data pipelines, and research prototypes. Passionate about applied AI, accessibility-driven systems, and real-world problem solving.

TECHNICAL SKILLS

Programming Languages	Python, C++, Java, JavaScript, Kotlin, HTML, CSS
AI & Machine Learning	Machine Learning, Deep Learning, CNNs, Autoencoders, NLP, Agentic AI, Prompt Engineering
AI Frameworks & Libraries	TensorFlow/Keras, RASA, OpenCV, Mesa, Streamlit
Web & Mobile Development	Django REST, Next.js, Node.js, Android (Jetpack Compose), Firebase
Data & Databases	SQLite, PostgreSQL, MySQL, Data Analysis, Web Scraping
Cloud & DevOps	Firebase, Git, CI/CD basics, RESTful APIs
XR (Extended Reality)	Conceptual understanding of AR/VR interaction models and simulation-based environments

SELECTED PROJECTS

- **ShadowByte – AI-Assisted Cyber Intelligence Platform** (GitHub)
  Developed an AI-assisted cyber intelligence system to support digital crime investigations in collaboration with the Criminal Investigation Department (CID) of Sri Lanka. The platform applies machine learning and analytical reasoning techniques to identify suspicious behavioral patterns and extract actionable insights from digital evidence, with a strong emphasis on secure data handling and ethical AI practices for law enforcement use.
  Python, Machine Learning, Cyber Intelligence

- **CareSync – Healthcare Team Coordination and Wellness Platform** (GitHub)
  Built a full-stack healthcare coordination platform to help medical professionals manage work schedules, wellness routines, and team collaboration in high-pressure clinical environments. The system integrates secure authentication, privacy-aware data sharing, and role-based access control to support shift planning, habit tracking, and team communication. Awarded 1st Runner-Up at Code with WIE 2025, organized by IEEE Sri Lanka.
  Next.js, React, TypeScript, Supabase, PostgreSQL

- **Athena – AI-Powered Dementia Care Management Application** (GitHub)
  Developed a caregiver-centric web application to support dementia patient monitoring through structured daily logging, behavioral analytics, and sentiment-based insights. The platform provides interactive dashboards and an AI-assisted guidance interface to enhance care coordination and informed decision-making for caregivers.
  React, Python, AI Simulation, Data Visualization

- **Ontology-Based Bookstore Management System** (GitHub)
  Implemented a semantic bookstore simulation by integrating OWL/RDF ontologies with a multi-agent system architecture. Autonomous agents were designed to model customer behavior, inventory management, and operational decision-making, supported by a real-time analytics dashboard for monitoring system performance.
  Python, OWL/RDF, Owlready2, Mesa, Streamlit

- **Image Denoising Autoencoder** (GitHub)
  Designed and trained a convolutional autoencoder to remove noise from grayscale images while preserving structural details. The model was evaluated using the MNIST dataset and integrated into an interactive graphical interface to enable real-time denoising, batch processing, and visual comparison of results.
  TensorFlow, Keras, Deep Learning, OpenCV, Tkinter

- **Agentic Guest Experience Optimization System – Cinnamon Hotels** (GitHub)
  Designed an intelligent guest engagement system for the hospitality domain using multi-stage AI reasoning. Implemented customer grouping through unsupervised learning and predictive behavior modeling to enable adaptive, context-aware guest interactions. Incorporated an agent-driven retrieval framework to automate personalized communications across guest touchpoints.
  Python, Scikit-learn, Agentic RAG, Streamlit

- **eGOV – Modular National e-Government Platform** (GitHub)
  Contributed to the design of a scalable digital governance ecosystem consisting of independent citizen, administration, and analytics portals. Engineered a unified codebase with containerized development workflows, enabling efficient deployment and data-driven public service insights.
  Next.js, Docker, Supabase, PostgreSQL, Monorepo Architecture

RESEARCH & PUBLICATIONS

- **AI-Driven Inclusive Digital Infrastructure: A Unified Cognitive Load Framework**
  Presented at *ICDS 2025, West Bengal, India*. Proposed an adaptive AI architecture that dynamically adjusts digital content complexity based on user sensory and cognitive constraints. The framework employs transformer-based intelligence and edge-aware processing to reduce cognitive overload for Deaf and Hard-of-Hearing (DHH) and Blind and Visually Impaired (BVI) users.
  Keywords: Adaptive AI, Cognitive Load Modeling, Multimodal Systems, Edge Intelligence

- **A Unified Framework for SLA-Aware and Carbon-Conscious Green Cloud Computing**
  Presented at the *18th International Research Conference (IRC), KDU*. Introduced a decision-oriented cloud optimization framework that jointly balances service reliability, energy efficiency, and carbon impact. The model integrates sustainability metrics with SLA enforcement using multi-criteria optimization techniques.
  Keywords: Sustainable Cloud Systems, Green Computing, SLA Optimization

- **Designing Sleepzy: Mobile Interface for Lucid Dream Induction via Smart Pillows**
  Presented at the *18th IRC, KDU*. Designed a non-intrusive mobile-centered framework that integrates smart pillow sensing with adaptive user interfaces to support REM-phase awareness and personalized sensory cue delivery for sleep enhancement and disorder mitigation.
  Keywords: Sleep Technologies, Adaptive Interfaces, REM Analysis, HealthTech

- **Enhancing Sustainability Awareness Through Mobile Applications**
  Presented at the *18th IRC, KDU*. Conducted a qualitative and technical evaluation of sustainability-oriented applications to identify design and engagement limitations affecting long-term behavioral change and real-world environmental impact.
  Keywords: Sustainability Informatics, UX Evaluation, SDG Technologies

ONGOING RESEARCH & INNOVATION

- **Topology-Informed 3D Fossil Reconstruction** *Lead Researcher*
  May 2025 – Present
  - Conducting a scoping review and developing a novel generative framework combining Graph Neural Networks (GNN) and GANs to reconstruct fragmentary fossils.
  - Designed a pipeline that utilizes GNNs to encode anatomical adjacency (topology) and GANs for geometric synthesis, addressing the "anatomical ignorance" of standard 3D inpainting models.
  - Proposed a "Dual-Metric Evaluation" protocol using SSIM (perceptual) and Chamfer Distance (geometric) to ensure biological plausibility.
- **Real-Time Agentic Gameplay Coaching System** *AI Architect*
  Dec 2025 – Present
  - Architecting a multi-layered Agentic AI system designed to provide real-time strategic coaching for competitive gaming (e.g., Valorant/Brawlhalla).
  - Developing a 7-layer system flow that processes game state telemetry and visual data to generate context-aware tactical advice, moving beyond simple state-tracking to active hypothesis generation.
  - Implementing ontology-based decision trees to map in-game events to high-level strategies, focusing on low-latency inference for live gameplay support.
- **ViDocX: AI-Driven Accessibility Framework** *Final Year Project*
  Nov 2025 – Present
  - Developing an AI-powered document parsing engine designed to make complex academic PDFs accessible to Blind and Visually Impaired (BVI) students.
  - Engineering a pipeline that moves beyond standard OCR by using LLMs to interpret semantic document layout (columns, diagrams, mathematical formulas) and converting them into navigable, screen-reader-friendly formats.
  - Integrating ontology-based metadata extraction to improve the searchability and context retrieval of academic literature for accessibility tools.
  - Done in collaboration with the Ceylon School for the Deaf and Blind, Ratmalana.

ACHIEVEMENTS & AWARDS

- Runner-Up – Code With WIE 2025 organized by the IEEE WIE Sri Lanka Section
- Runner-Up – Innov8x University Edition 2025 organized by Zebra Technologies
- Finalist – Rootcode Tech Triathlon 2025
- Finalist – CodeRally 6.0 (Advanced Tier), organized by IEEE Computer Society Student Branch Chapter of IIT
- Finalist - Mini Hackathon organized by the Stat Circle of the University of Colombo
- Best Use of Technology - Data Odyssey 2025, organized by the AI and Data Science Club of KDU
- Finalist - Cypher 3.0, organized by the WIE Stundent Branch Affinity Group of KDU
- IEEE Xtreme Global Participant – 2024, 2025
- Deans List Awardee for maintaining a GPA above 3.60 awarded by the Faculty of Computing, KDU

LEADERSHIP & VOLUNTEERING

- Chairperson – IEEE Computer Society Student Branch Chapter, KDU (2025–Present)
- Program and Finance Team Member – IEEE Student Branch, KDU (2023-2025)
- Program Team Member British Computer Society Student Chapter, KDU (2023)

PROFESSIONAL WORK EXPERIENCE

- **Head Coach – Debating** *Apr 2022 – Present*
  D. S. Senanayake College, Colombo *Hybrid*
  Serves as Head Coach for the school debating team, responsible for training students in argument construction, logical reasoning, rebuttal techniques, and competitive strategy. Led teams through structured practice programs while mentoring students in leadership, teamwork, and effective communication.

- **Intern – Network Services Center** *Jun 2022 – Jan 2023*
  Sampath Bank PLC *On-site — Colombo, Sri Lanka*
  Worked within the Network Services Center supporting critical banking operations, including cheque clearance processes, online payment transaction handling, and ATM service coordination. Gained hands-on exposure to operational reliability, transaction security, and enterprise-scale financial systems.

- **Head Coach – Debating** *Nov 2020 – Mar 2022*
  Mahamaya Girls' College, Kandy *Remote*
  Led and coached the school debating team through remote training programs, focusing on analytical thinking, case-building, and structured argument delivery. Adapted coaching methodologies to virtual environments while maintaining performance standards and student engagement.

SOFT SKILLS

- **Analytical Thinking & Problem Solving**
  Strong ability to decompose complex technical problems, evaluate alternative solutions, and design structured, efficient approaches—applied across machine learning models, agentic systems, and research frameworks.

- **Critical Thinking & Logical Reasoning**
  Experienced in reasoning under constraints, validating assumptions, and making evidence-based decisions, particularly in AI system design, research analysis, and algorithmic workflows.

- **Technical Communication**
  Capable of clearly explaining complex technical concepts, system architectures, and research outcomes to both technical and non-technical stakeholders through documentation, presentations, and collaborative discussions.

- **Collaboration in Technical Teams**
  Effective contributor in multidisciplinary teams, working across development, research, and design roles while maintaining code quality, clarity of responsibilities, and shared project ownership.

- **Time Management & Execution**
  Proven ability to manage multiple concurrent technical commitments including coursework, research, and development while meeting deadlines and maintaining consistent delivery quality.

- **Adaptability & Self-Directed Learning**
  Rapidly adapts to new tools, frameworks, and domains, with a strong habit of independent learning in emerging areas such as agentic AI, ontologies, and applied machine learning.

- **Leadership & Mentorship**
  Experience guiding teams and individuals through structured feedback, planning, and performance improvement supporting collaborative technical environments rather than replacing hands-on contribution.

- **Professional Ethics & Responsibility**
  Maintains a strong ethical approach to software development and research, particularly in handling sensitive data, AI responsibility, and compliance-driven environments.

REFERENCES

- **Dr. Kaneeka Vidanage**
  Head of Department – Computer Science
  General Sir John Kotelawala Defence University

Email: vidanage_bvki@kdu.ac.lk
Contact: +94 71 354 3786

- **Dineth Hettiarachchi**
  Associate Software Engineer
  WSO2 - Sri Lanka
  Email: dinethhettiarachchi5@gmail.com
  Contact: +94 71 346 2964

I hereby confirm that the above information is true and correct.