

Academic & Technical Profile: Dr. Maryam R. Aliabadi

Fields of Research: Applied Machine Learning, Cyber-Physical Systems (CPS) Security, Multimodal Natural Language Processing (NLP), Cloud Computing, Digital Safety Systems and Interactive Educational Telemetry.

Affiliations:

- School of Computing and Academic Studies, British Columbia Institute of Technology (BCIT);
- Department of Computer Science, University of British Columbia (UBC).

1. Professional Biography

Dr. Maryam R. Aliabadi is a computer scientist, cybersecurity researcher, and educator whose work resides at the intersection of applied artificial intelligence, cloud-native architectures, and socio-technical safety systems. She is currently a full-time faculty member in the School of Computing and Academic Studies at the British Columbia Institute of Technology (BCIT) and a sessional faculty member in the Department of Computer Science at the University of British Columbia (UBC).

With over a decade of international experience spanning advanced research and development, software engineering, cloud architecture, and IT project management, Dr. Aliabadi has built a multidisciplinary career focused on designing resilient, intelligent systems to solve complex technological and societal safety challenges.

Throughout her career, Dr. Aliabadi has been driven by a simple question: *How can technology be designed not only to connect people, but also to protect them?* From securing cyber-physical systems and critical infrastructure to developing AI-powered safety technologies for children, her work reflects a consistent commitment to applying advanced computing research to real-world societal challenges. This mission ultimately led to the creation of Kids Shield Services Inc., where she is developing next-generation digital safety infrastructure for youth in online environments.

As the founder and technical lead of the Kids Shield research initiative and its flagship platform, Guardian Sphere, she directs the engineering of next-generation multimodal machine learning frameworks designed to identify anomalous behavioral patterns and proactively secure real-time digital communication channels.

Her long-term research mission focuses on leveraging artificial intelligence as a powerful vehicle for human well-being, critical infrastructure resilience, digital trust, and accessible computing education.

2. Institutional Appointments

Full-Time Faculty Member

School of Computing and Academic Studies, British Columbia Institute of Technology (BCIT)

- **Scope:** Conducts advanced curriculum development and instructional delivery in computing science and emerging technologies. Directs applied research initiatives across the domains of distributed systems, machine learning pipelines, and operational technology (OT) security frameworks.

Sessional Faculty Member

Department of Computer Science, University of British Columbia (UBC)

- **Scope:** Contributes to computer science pedagogy with specialized instruction in distributed data systems and cloud-native engineering. Emphasizes experiential, project-based learning to prepare students for large-scale engineering challenges.

Founder & Chief Executive Officer

Kids Shield Services Inc.

- **Scope:** Leads an applied technology venture dedicated to constructing secure, trustworthy digital environments for youth and educational institutions. Oversees the core architecture of *Guardian Sphere*, translating theoretical machine learning models into highly scalable, low-latency deployment pipelines.

3. Entrepreneurial Leadership

Dr. Aliabadi founded Kids Shield Services Inc. in response to the growing global crisis of cyber incidents; particularly, cyberbullying, online harassment, hate speech, and digital harm affecting children and youth. The company combines advances in:

- Artificial Intelligence
- Multimodal Machine Learning

- Behavioral Analytics
- Cybersecurity
- Educational Intervention Frameworks

to create safer online environments for future generations.

Its flagship platform, **Guardian Sphere**, is being developed as a scalable digital safety platform capable of protecting users across:

- Online Gaming Ecosystems
- Educational Technology Platforms
- Social Communication Networks
- Community Engagement Platforms
- Future Metaverse and Virtual Environments

The company's strategic focus on online gaming is driven by growing evidence linking toxic online interactions to adverse mental health outcomes among youth. The long-term vision of Kids Shield is to establish globally trusted digital safety infrastructure capable of proactively protecting individuals while promoting healthy, respectful, and inclusive online interactions.

4. Academic Foundation

- **Doctor of Philosophy (Ph.D.) in Computer Science and Engineering** *Joint Doctoral Program:* University of British Columbia (Canada) & Shahid Beheshti University (Iran)

Research Focus: Cybersecurity analytics, fault injection frameworks, machine learning classifiers, cyber-physical systems (CPS), intelligent security systems and dependable distributed architectures.

- **Master of Science (M.Sc.) in Computer Engineering** *Institution:* University of British Columbia (UBC)

Laboratory: Dependable and Secure Systems Laboratory

Research Focus: Fault-tolerant computing, critical infrastructure protection paradigms, and systems-level threat modeling.

5. Primary Research Tracks & Core Engineering Domains

Dr. Aliabadi's research portfolio is driven by a foundational inquiry: *How can distributed intelligent architectures proactively mitigate risk and guarantee safety boundaries in increasingly complex, multimodal human-in-the-loop environments?* Her work is divided into four primary technical domains:

Track A: Multimodal Streaming Analytics & Machine Learning

- **Sequence Classification & NLP:** Engineering transformer-based language models optimized to detect complex adversarial syntax, character mutations (leetspeak), and contextual harassment markers across varying temporal scales.
- **Multimodal Fusion Architectures:** Building low-overhead inference pipelines that simultaneously process and fuse heterogeneous data channels, explicitly covering:
 1. *Acoustic Telemetry* (Real-time live voice streams utilizing streaming speech recognition)
 2. *Textual Transcripts* (Synchronous chat log processing)
 3. *User-Generated Graphics* (Meme interpretation via computer vision)
 4. *Static Visual Media* (Image understanding matrices)

Track B: Cyber-Physical Systems (CPS) & Operational Technology (OT) Security

- **Critical Infrastructure Resilience:** Collaborating with industrial research initiatives, including BCIT's SMART project, to develop threat detection and validation frameworks for industrial control systems (ICS).
- **Smart Grid Hardening:** Researching defensive analytics to protect energy management architectures, localized micro-grids, and critical utility infrastructures against adversarial state or localized exploits.

Track C: Adversarial AI & Defensive Security Frameworks

- **The New Architecture of Deception:** Tracking and identifying emerging social engineering threat profiles enabled by generative AI. This includes modeling detection mechanisms for synthetic media, deepfakes, and automated voice-cloning exploits.
- **Responsible AI & Explainability:** Designing transparent decision-support systems that ensure algorithmic fairness, control false-positive rates in high-throughput streams, and respect strict user privacy constraints.

Track D: Educational Technology & Pedagogical Innovation

- **Generative AI in Assessment:** Engineering automated, AI-assisted evaluation and autograding systems designed to provide scalable, highly granular feedback loops while reducing instructor overhead.
- **Immersive Security Education:** Designing interactive, gamified computing curricula emphasizing distributed deployment, cost optimization, and active project-based critical thinking.

6. Educational Innovation

Dr. Aliabadi has actively contributed to the advancement of AI-enhanced learning environments and computing education. One of her notable contributions includes the design and delivery of: **CPSC 436C: Cloud Computing for Data Science**. A specialized course that introduces students to:

- Cloud Architecture
- Distributed Computing
- Security Engineering
- Cost Optimization
- Cloud-Native Applications
- Scalable Data Systems

Her educational philosophy emphasizes active learning, problem-solving, industry relevance, and responsible integration of artificial intelligence into modern pedagogy.

7. Architectural Case Study: Guardian Sphere & The Guardian Portal

The practical manifestation of Dr. Aliabadi's research is **Guardian Sphere**, a globally deployable digital safety platform designed to replace traditional, reactive keyword-filtering mechanics.

[Audio, Text, Visuals] —► [Streaming ML Pipelines] —► [Sub-400ms Inference Engine] —► [Proactive Intercept/Portal Telemetry]

- **The Sub-400ms Inference Constraint:** Unlike standard moderation pipelines that rely on batch-processing logs post-incident, Guardian Sphere utilizes optimized parallel pipelines targeted to run within a sub-400ms window. This guarantees zero frame-rate degradation or synchronization lag in real-time environments like online gaming or live virtual classrooms.
- **Proactive Educational Intervention:** When an anomalous or toxic communication sequence is classified, the platform temporarily intercepts the outbound packet.

Rather than executing a blind ban, the system generates a contextual prompt, creating an instantaneous pedagogical feedback loop that guides the user to structurally reshape their content before authorization.

- **The Guardian Portal:** A centralized data visualization and governance architecture designed for macro-level system administration. The portal translates high-velocity multimodal telemetry into structured metrics—tracking behavioral trends, risk indicators, and escalation patterns—to provide system administrators with auditable records for institutional compliance.

8. Regulatory & Socio-Technical Framework Alignment

Dr. Aliabadi's architectural designs explicitly incorporate "Safety-by-Design" principles, ensuring technical compliance with tightening global regulatory and statutory frameworks, including:

- **Canada:** Bill C-63 (Online Harms Act) and PIPEDA core privacy principles.
- **United Kingdom:** The Online Safety Act and statutory Ofcom engineering guidance.
- **European Union:** The Digital Services Act (DSA) compliance matrices for algorithmic transparency and auditability.

9. Selected Honors, Recognitions & Academic Outputs

- **Third Place Winner, *Ideas with Impact Competition*** – UBC Faculty of Science (2024)
- **People's Choice Award, *Postdoctoral Research Day*** – University of British Columbia (2021)
- **Winner, *Three-Minute Thesis (3MT) Competition*** – Applied Science, University of British Columbia (2017)
- **Media Broadcasts:** Expert Commentator on *CTV News* and *Global News* (2025).
- **Technical Presentations:** Contributor at **Web Summit, SIGCSE, WCCCE, UBC CTLT** and **BCNET Connect**.
- **Ecosystem Collaborations:** Actively interfaces with a diverse innovation network including Amazon Web Services (AWS), UBC Cloud Innovation Centre (CIC), and global startup accelerators.

10. AI for Good & Social Impact

A defining characteristic of Dr. Aliabadi's work is her commitment to ensuring that advances in technology contribute to positive societal outcomes. Her research and entrepreneurial activities align closely with several United Nations Sustainable Development Goals:

- **SDG 3 – Good Health and Well-Being**

- SDG 4 – Quality Education
- SDG 9 – Industry, Innovation and Infrastructure
- SDG 10 – Reduced Inequalities
- SDG 16 – Peace, Justice and Strong Institutions

Through research, education, and entrepreneurship, she seeks to create technologies that protect vulnerable populations, strengthen digital trust, and improve access to knowledge. Technology should not only connect people—it should actively protect, educate, and empower them. Dr. Maryam R. Aliabadi is committed to advancing the next generation of AI-powered systems that improve human well-being, strengthen digital safety, enhance education, and foster responsible innovation worldwide.

8. Professional Links

- **Professional Network:** [LinkedIn Profile](#)
- **Scientific Citations:** [Google Scholar Profile](#)
- **Venture Website:** [Kids Shield Services](#)
- **Personal Research Portal:** [Dr. Maryam R. Aliabadi Official Portfolio](#)
- **Selected Executive Interviews:**
 - [Kids Shield Presence at CTV News- 2025](#)
 - [Kids Shield Presence at Global TV News - 2025](#)
 - [Dr. Aliabadi's Interview with Stigma-free](#)
 - [Dr. Aliabadi's Interview at UBC Center of Teaching and Learning](#)
 - [Dr. Aliabadi's Talk at BCIT - 2025](#)