

BASSAM KAMAL

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SUMMARY

AI engineer and founder who ships applied AI systems end to end: on-device ML, RAG, and agentic tool surfaces, plus the full-stack and systems infrastructure underneath. CTO and co-founder of **Adptiv AI** (Spark Tank winner, AI2Market accelerator cohort). Currently shipping production code at Iron Fox Games (promoted Junior to Software Engineer) while finishing a BSc in Computer Science.

EXPERIENCE

Software Engineer (promoted from Junior Software Engineer), Iron Fox Games Jun 2025 to Present

- **Shipped end to end as sole web developer:** designed and built the studio's **game portal website** from scratch on a modern TypeScript stack, with every title presented inside its own custom-themed in-browser arcade machine and playable directly in the browser.
- **Built the designer-facing CMS** from the ground up with **JSONForms** and **Zod schema validation**, so designers add and configure new games without developer involvement, removing a recurring engineering bottleneck.
- **Owned production systems and CI/CD:** shipped player-facing gameplay features through design, implementation, QA, and code review, and built **GitHub Actions** and **Docker** pipelines automating build, test, and deploy across multiple services.

SELECTED PROJECTS

Adptiv AI : On-Device AI Kinesiology Coach (Health) CTO & Co-Founder *Spark Tank Winner / AI2Market Cohort*
Python, PyTorch, TensorFlow Lite, RAG, vector DB, mobile | adptiv.ca

- Architected a mobile health app that adapts workout programming in real time from user adherence and performance signals. Trained custom **pose-estimation** and **exercise-classification models** and shipped the full **on-device inference pipeline** for low-latency mobile execution.
- Built a **RAG pipeline with vector search** over peer-reviewed kinesiology literature and in-house clinician knowledge to generate NASM-aligned plans grounded in cited sources, with a **per-exercise precision and recall evaluation harness** that surfaced failure modes a single accuracy number would have hidden.

Upstart AI : Generative Business Automation Platform *MacLauchlan Finalist*
LLMs, diffusion image generation, scheduling layer, full-stack

- Built a generative platform that combines **LLM text generation, diffusion image generation, and a scheduling layer** to produce and post marketing content (posts, posters, copy, imagery) for small businesses, either from user-supplied material or fully AI-generated.

Local-First AI Desktop Assistant (OMI fork) *Ongoing*
Python, local LLMs, speech-to-text, MCP, desktop

- Re-implementing an always-on desktop AI assistant inspired by OMI that listens to conversations and emits **tasks, notes, and summaries**. Ported the full pipeline from cloud APIs to run **entirely locally** (local STT, local LLM inference, on-device storage) for privacy and offline use.
- Building an **MCP (Model Context Protocol) server** with typed tool and context adapters so external agents and front-ends drive the assistant through schema-validated contracts rather than ad-hoc IPC, the substrate beneath agentic-UI experiences.

Multiplayer Racing Game on a Custom C++ Engine *Capstone*
C++, OpenGL/PBR, physics, multiplayer networking, Steam SDK

- Built a **custom C++ engine** from scratch (dynamic-tree spatial partitioning, optimized particle system, real-time PBR renderer, custom shaders, procedural map generation) and shipped a complete multiplayer racing game on top of it as sole developer.
- Designed the **networking layer end to end:** Steam SDK lobby and matchmaking, authoritative server topology with client-side prediction, snapshot interpolation, and bandwidth-aware state replication for physics-driven traversal.

QuadStick Config Manager : Accessibility Desktop App (Health) *C#.NET, WPF*
• Built a desktop configuration tool for **quadriplegic users of the QuadStick mouth-operated controller**, with profile flashing and hardware configuration through an accessibility-first UI and CI/CD set up for release reliability for users who depend on the device for computer access.

EDUCATION

B.Sc. Computer Science, Specialization in Video Game Programming, University of Prince Edward Island Sept 2022 to May 2026

TECHNICAL SKILLS

AI / ML: PyTorch, TensorFlow Lite, on-device inference, pose estimation, RAG, vector search, LLM and diffusion pipelines, local LLM deployment, MCP servers, per-class eval harness design

Languages: C++, Python, C#, TypeScript, JavaScript, Dart, Java, SQL

Systems & Networking: custom engine development, real-time PBR rendering, spatial data structures, physics, multiplayer networking (Steam SDK, client prediction, state replication), shaders

Full-Stack, Cloud & DevOps: Flutter, React, Node.js, AWS Lambda, Firebase, REST APIs, serverless, GitHub Actions, Docker, CI/CD, Playwright, JSONForms, Zod