

# JOHN K RYU

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## PROFESSIONAL EXPERIENCE

**AI Engineer | TecAce Software Ltd** Bellevue, WA | April 2025 - Present

- Architected enterprise-grade AI chatbot builder platform with a retrieval-augmented generation (RAG) pipeline utilizing LangChain, LangSmith, and LangGraph for advanced document processing and retrieval
- Developed hybrid search optimization implementing RRF reranking, cross-encoder reranking, and score fusion techniques for enhanced search relevance
- Built vector database architecture with embeddings and semantic search capabilities, managing dense/sparse retrieval systems for enterprise knowledge management
- Designed configurable AI chatbot builder with intelligent parsers, chunkers, and search methods supporting multi-modal query processing

**e-Commerce Engineer/Owner | Roem Ventures LLC** Seattle, WA | May 2022 - Present

- Founded and developed e-commerce brand from concept to market launch including comprehensive product development, logistics coordination, and business operations management
- Engineered custom Shopify solutions using Liquid programming developing tailored plugins and functionality enhancements for optimized user experience
- Implemented integrated marketing campaign strategies utilizing Google AdWords and Facebook Advertising platforms for targeted customer acquisition and conversion optimization
- Orchestrated end-to-end supply chain and logistics operations managing vendor relationships, inventory systems, and order fulfillment processes

**Software Engineer - Xfinity X1 & Flex | Comcast** Philadelphia, PA | Oct 2017 - Nov 2021

- Successfully developed and maintained Xfinity Flex Streaming product from ground up building key middleware APIs that power core Flex features, resulting in positive customer feedback
- Exceeded subscription acquisition targets by 1000% surpassing initial goal of 100K subscriptions within six months by acquiring over 1 million subscriptions
- Developed and maintained core features for cloud-based X1 Guide interface directly impacting over 31 million customers across Xfinity TV platform
- Implemented scalable backend architecture using distributed systems design principles to support millions of concurrent streaming users

**Startup Founder | Parkgorithm** Philadelphia, PA | May 2016 - Jun 2017

- Founded startup company with vision to resolve urban street parking challenges through innovative mobile technology solutions
- Led cross-functional development team managing product roadmap and technical implementation for Android mobile application MVP
- Executed comprehensive market research and user validation conducting stakeholder interviews and competitive analysis for product-market fit assessment

**Software Engineer | Graphite GTC** Bryn Mawr, PA | May 2015 - May 2016

- Developed client-side applications for Android and Web platforms implementing responsive user interfaces and cross-platform compatibility solutions
- Contributed to development of proprietary Graphite software platform focusing on user experience optimization and performance enhancement
- Collaborated on full-stack development initiatives ensuring seamless integration between mobile applications and web-based systems

**Undergraduate Researcher | Temple University** Philadelphia, PA | Jun 2015 - Oct 2015

- Conducted computer vision research under NSF funding developing machine learning algorithms for mobile robot object detection and recognition systems
- Developed innovative "Supported\_By" algorithm in MATLAB enabling spatial relationship detection for autonomous robotics applications
- Published research findings and presented technical solutions contributing to advancement of computer vision and robotics field knowledge

**Founder/Sales Director | Fatty Pocket** Norristown, PA | Sept 2011 - Jul 2013

- Founded and scaled digital marketing platform collaborating with local businesses to develop and execute targeted coupon marketing campaigns across multiple industries
- Led business development and sales operations managing marketing professionals and sales teams to identify growth opportunities and maintain strategic vendor relationships
- Executed data-driven marketing strategies utilizing consultative approach to demonstrate value proposition and ensure seamless campaign execution from concept through performance analysis

## TECHNICAL SKILLS

<b>AI/Machine Learning:</b> RAG Pipeline Architecture • Hybrid Search Systems • Vector Databases • LangChain • PyTorch • AI Chatbot Development • Intent Classification • Cross-encoder Reranking • Semantic Search	<b>Databases:</b> PostgreSQL • MySQL • DynamoDB • MongoDB • Vector Databases (Milvus) • Redis
<b>Frontend:</b> React.js • Next.js 14 • TypeScript • JavaScript ES6+ • HTML5/CSS3 • Tailwind CSS • Responsive Design	<b>Cloud/DevOps:</b> AWS (EC2, S3, Lambda, EKS, Bedrock) • Docker • Kubernetes • CI/CD Pipelines • GitHub Actions
<b>Backend:</b> Java • Spring Boot • Node.js/Express • Python • Flask/FastAPI • RESTful APIs • GraphQL • Microservices	<b>Tools:</b> Git/GitHub • JIRA • Agile Methodology • API Testing • Performance Optimization

## KEY PROJECTS

- AI Chat Builder Platform - Enterprise RAG System**  
Hybrid search system combining BM25 sparse retrieval with dense vector embeddings. Multi-modal architecture supporting document search and real-time processing. Tech: Python, FastAPI, LangChain, AWS Bedrock, Milvus
- iOS Application: FitLifePal**  
Fitness application tracking daily estimated calories burned and consumed to help users reach fitness goals. Consumes Nutritionix REST API and retrieves JSON nutrition facts
- Java Application: EZ-Doc**  
Web document generator with four main components: GUI, file manager, file translator, and script interpreter. Designed to simplify HTML report creation process
- Capstone Project: Proximity Marketing Platform - Marko Promo**  
Four-component system including Web Application (LAMP stack), Cloud component, Embedded component (Raspberry Pi), and Mobile Application. Web application hosted on AWS

## EDUCATION

**Bachelor of Science in Computer Science**  
Temple University | College of Science & Technology | Philadelphia, PA