

# JACOB WINDLE

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## ⚙️ SUMMARY

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Full-stack technical leader with 10+ years building production systems from embedded devices to cloud-scale AI applications. Currently driving LLM innovation at Instructure while serving as part-time CTO at Hemispheres Neuro, with prior experience optimizing systems at Amazon. Proven ability to deliver end-to-end solutions independently or while leading distributed teams, with expertise spanning low-level systems (C/C++), modern web applications (Python, JavaScript, Go), AI/ML (LLMs, RAG, embeddings), and cloud infrastructure (AWS, Terraform). Track record of securing funding through technical excellence and delivering measurable business impact: millions of hours saved through automation, \$300k+ cost reductions, and 200x performance improvements. Entrepreneurial mindset with hands-on engineering expertise across the entire stack.

## ⚙️ SKILLS

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- **AI/ML:** LLMs (GPT, Claude, Bedrock), RAG, Embeddings, Fine-tuning, spaCy, scikit-learn, Neural Machine Translation
- **Languages:** Python, Java, C++, C, C#, JavaScript, Go, Ruby, Clojure, Julia, Dart
- **Web & Frameworks:** Django, React, Spring Boot, .NET/Blazor, Flask, Ruby on Rails, Express, Flutter
- **Infrastructure:** AWS (ECS, Lambda, S3, RDS, DynamoDB), Terraform, Docker, Kubernetes, CI/CD (GitHub Actions, Jenkins)
- **Databases & Tools:** PostgreSQL, MongoDB, Redis, Airflow, Ansible, Git, Linux

## 👤 EXPERIENCE

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**Instructure** Remote, Tennessee

November 2023 – Present

*Senior Software Engineer*

- Co-author of Ignite Agent, AI application featured in Forbes and AWS blogs that saves millions of hours for educators by automating Canvas workflows through natural language. Built with Spring Boot, AWS Bedrock, and SageMaker.
- Developed RAG-based tool selection system for Ignite Agent, implementing ToolRAG pattern to improve accuracy by dynamically selecting relevant tools from 10+ available integrations.
- Developed LLM-powered internationalization software, saving the company over \$300k on translation costs while expanding Canvas to 200+ languages.
- Fine-tuned m2m\_100 model for low-resource language translations, expanding educational access to marginalized communities globally.
- Built DynamoDB-backed data models and architected generalized tool-calling flow for production AI agent serving thousands of educational institutions.
- Public speaker and AI advocate, driving adoption through conference presentations and stakeholder engagement across internal and external audiences.

**Amazon** Remote, Tennessee

September 2022 – November 2023

*Software Development Engineer II*

- Developed low-latency endpoint in C++, allowing customers to render customer-owned assets.
- Designed and implemented feature in Java service for customers to fix image defects by re-uploading assets, allowing customers to fix defects without any code changes on their side.
- Developed feature in C++ rendering service where customers can set release dates for assets, improving data privacy for existing customers while improving customer experience by allowing uploads.
- Created CI/CD pipelines with AWS CDK for internal tooling, automating previously manual deployments decreasing deployment errors and increasing developer velocity.
- Building consensus across teams and collaborating on bigger features.

**Hemispheres Neuro, LLC** Johnson City, Tennessee

July 2021 – Present

*Chief Technology Officer - Part-Time*

Working with Ph.D. Neuroscientists and licensed Clinical Psychologists to create cutting edge mental-health evaluation software. Solely responsible for the product roadmap and architecture. Delivering end-to-end software solutions that solve customer needs.

- Created data analysis web application with React, replacing legacy native employee app and giving greater flexibility in presentation of data.
- Developed native service with C# and .NET to interface with eye-tracking hardware.
- Developed progressive web application in C#, .NET and Blazor to replace native customer application, reducing customer install issues by removing the install path for the most ephemeral component.
- Reduced the install size of the application by 300%, saving space on client computers and leaving less of a footprint.
- Developed a Windows installer for the application, bundling the eyetracker runtime and drivers, saving customers the headache of having to install drivers separately.
- Designed layered architecture for customer application, where UI is interchangeable allowing easy expansion of product line.
- Performing data analysis in Julia, helping to analyze customer data and developing algorithms to use in production software.
- Rewrote legacy Python 2 backend in Clojure with Ring, Reitit and Compojure. With re-write we have achieved over 200x speedup of data processing, with a fraction of the computing power needed.
- Built infrastructure automation to spin up application servers on shared VPS hosting using Ansible and Bash. Automated setup of Nginx proxy, SSL cert installation with Certbot, and jar build/deployment.

**Picnic Score, Inc.** Remote, Maryland

February 2020 – September 2022

*Staff Software Engineer*

- Developed new architecture for core product, saving 80% on AWS spend.
- Created suite of Julia web services, to host machine learning models and compute relevant risk scores for clients.
- Wrote precompilation scripts and operated Julia service in production.
- Developed full-stack web application in Go, used to showcase the product while generating leads.
- Wrote Github Actions to increase developer velocity.
- Trained and deployed spaCy entity recognition models, to help find customer-owned entities within customer documents.
- Designed serverless architecture for web scraping software using Node.js, Chrome, Puppeteer, Supervisor and Docker.
- Led team of junior engineers, planning web scraping project and ensuring project delivery end-to-end.
- Managed the entire company's infrastructure using Terraform, increasing developer velocity by automating infrastructure creation, and allowing developers to learn about infrastructure by contributing to the codebase.
- Made company infrastructure SOC2-compliant by working with auditors, Vanta scanners, and existing infrastructure as code.

**Kickback Rewards Systems** Remote, Idaho

March 2019 – August 2020

*Senior Software Engineer*

Contributing to all areas of the organization, with active roles in embedded systems development, full-stack web development, project architecture, distributed systems development, ETL, and prototype development. Delivering systems that scale and provide value to the organization.

- Developed heartbeat protocol for embedded C application, reducing worst-case issue discovery time from 24 hours to 5 minutes.
- Developed dashboard with React and Django Rest Framework to display status of all client sites, allowing customer success staff to see status of all customers rather than wait for daily email.
- Led development of new reporting product with Python and Airflow, creating a new product and revenue stream for the company.

**Verodin, Inc.** Tyson's Corner, Virginia

March 2017 – March 2019

*Software Engineer*

- Developed license server for software with Python/Flask, allowing client installs to be licensed.
- Developed patch server for software with Python/Flask, allowing clients to opt into automatic upgrades.
- Automated manual builds with Github Actions, cutting build errors by 50%.
- Migrated frontend code to React from embedded Ruby, increasing testability and reducing bugs application.

**Integral Ad Science, Inc.** Chantilly, Virginia

March 2015 – March 2017

*Software Engineer*

- Developed model using scikit-learn and pandas to classify ad placements on web page, achieving 83% accuracy in production.
- Created Django app for labeling ad placements training data, used by in-house analysts and testers.
- Introduced CI/CD to team by writing Jenkins pipelines, increasing developer velocity

**Veenome, Inc.** Fairfax, Virginia

October 2014 – March 2015

*Junior Developer*

## STARTUPS/PROJECTS/CONTRACT WORK

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- MAIA - AI-Powered Justice-to-Employment Platform (Project Lead & Original Author)
  - Designed and developed original Django application from scratch, enabling client to secure \$500k in funding and expand development team.
  - Leading team of contracted engineers to scale platform that matches justice-involved individuals with employment opportunities using AI.
  - Architected and implemented embeddings-based semantic search system for intelligent job matching, improving candidate-job relevance.
  - Developed proprietary matching algorithm combining prompt engineering with custom scoring metrics to optimize placement success rates.
  - Built end-to-end AWS infrastructure using Terraform: ECS for containerized deployments, RDS for data persistence, S3 for object storage, AWS Secrets Manager for secure credential management.
  - Implemented secure network architecture with properly configured VPCs, private subnets, and public-facing ALB endpoints.
  - Established CI/CD pipelines and development best practices for distributed team collaboration.
- Fytfeed
  - Developed integration with popular fitness trackers in Flutter application, users activity is automatically synced with their social feed.
  - Built and architected backend system using Firebase, Firebase Functions, and Typescript to handle compute-intensive tasks.
  - Solved several efficiency issues, improving the user experience of the application.
- LLM Social Bot: <https://github.com/jaketothepast/llm-social-bot>
  - Built service in Clojure that runs on computer, receives Git patch files, formats and sends tweets on my behalf

## EDUCATION

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**George Mason University**, Fairfax, Virginia

2012 – 2018

*Bachelor of Science, Computer Science*