Carl Free

Applied AI Systems Engineer
Builds private, production-grade AI systems for enterprise workflows.

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- https://github.com/CarlFreeAiEngineer
- https://freeideas.com/resume/ (portfolio with demos)

Value Offered

- Over 40 years of professional software engineering.
- Many successful AI projects, even well before 2020's.
- Mastery of a wide variety of programming systems, especially the "difficult" ones, and especially AI and machine-learning.
- Proven ability to solve the most unusual and difficult architecture and production problems, whether they involve application of machine learning, advanced algorithms, integration with old legacy code, or advanced mathematics.
- Excellent public speaker, teacher, and technical leader.
- See https://freeideas.com/resume/ for demos and downloadable examples of work.

Skill Summary

- Rust: *EXPERT* (with AI help)
- Artificial Intelligence / Machine Learning: *EXPERT*
- Small Language Model training / fine-tuning / distillation: *EXPERT*
- Vision Models: *EXPERT*
- Java: *EXPERT*
- J2EE / Spring: *STRONG*
- Python: *EXPERT*
- TensorFlow and PyTorch: *STRONG*
- Flutter/Dart: *MEDIUM*
- JavaScript / Node.js: *STRONG*
- C# / .NET: *STRONG*
- C++: *MEDIUM*
- PHP: *EXPERT*
- Go Language: *MEDIUM*
- Blockchain / Smart Contracts: *MEDIUM*
- LISPy Languages, esp. Clojure and Scheme: *MEDIUM*
- Various flavors of assembly language: *MEDIUM*
- Linux Platform: *STRONG*
- Ability to quickly utilize new languages / systems / frameworks: *EXTRAORDINARY*

Recent Open-Source Work

2026; DecisionGator; https://github.com/CarlFreeAiEngineer/DecisionGator

Creator

- An offline AI decision component: a small trained model packaged as an ordinary library (.dll, .so, .dylib, or WebAssembly). Application code calls `is_yes(text, question)` or `choose(text, question, options)` and gets back a typed answer with a probability. No API key, no network, no prompt engineering.
- Fine-tuned and compressed a 435-million-parameter DeBERTa-v3 model to 8-bit and 4-bit weights; it answers 90.6% of 480 held-out yes/no test cases correctly across sixteen kinds of decisions.
- Native component in Rust over ONNX Runtime, with interfaces for Python, Java, TypeScript/JavaScript, C#, C, Rust, and Go on Windows, Linux, and Mac, plus a WebAssembly build that runs entirely in the browser: https://62-84-178-253.sslip.io/DecisionGator/try.html
- Published the training data and reproducible training recipes, so users can retrain it for their own decisions.

Experience

MAY 2024 – present; Upland Software; Dublin Ireland and Austin Texas

AI Engineer

- Trains small, specialized language models that outperform large, expensive general-purpose LLMs on narrow tasks — cutting token costs dramatically while improving data privacy and giving tighter control over latency.
- Created "AI Software Factory" — a tool that starts with normal specification documents, and reliably produces well-tested super-maintainable correct software, even for large-ish projects.
- Saved 90% of LLM token cost on large-PDF summarization. Devised a way to pull a small number of representative chunks from the vector database and get approximately the same summaries, with ~20% time savings and ~90% cost savings.
- Created "Virtual Employee" — a software product that runs on a VM and controls browsers, desktop software, control panels, and anything else a human user can control, by operating a Remote Desktop (RDP) session.

JAN 2022 – MAY 2024; IBM; Ireland

Senior AI Engineer

- Created prototypes of AI-enhanced, new product offerings. Examples: RAG systems, screen-reading automation, AI models that test other AI models, etc.
- Worked with Data Science researchers to create full-stack web apps, stand-alone desktop apps, and server-side APIs which demonstrate viability of new software products.

DEC 2012 – JAN 2022; IBM; Florida and Ireland

Senior Software Engineer

- Designed, implemented, and repaired high-performance custom software for many clients, such as Yum, Northrop Grumman, Lockheed Martin, and Shell Oil.
- Designed, wrote, and fixed web and mobile applications.
- Extended and maintained multi-million-line full-stack web apps.

NOV 2003 – DEC 2012; Outstart, Inc.; Lake Mary, Florida

Senior Technical Consultant

- Designed and implemented scalability solutions for training systems with thousands of simultaneous users, for both government and commercial organizations.
- Designed custom solutions for interoperability with popular software products and legacy systems.
- Wrote enterprise software that was sold to many Fortune 100 companies, as well as shrink-wrapped commercial software.

- Created monitoring and analysis tools for managing web applications with thousands of simultaneous users.
- Principal consultant to Australia's Department of Defense, worked at their facilities in Canberra to improve performance and stability of training systems.
- Chief consultant to US Navy. Led many engagements, resulting in solutions to many long-standing problems involving scalability and stability of training systems that serve many thousands of sailors.

JAN 2001 – NOV 2003; Convergys Corporation; Lake Mary, Florida

Developer/DBA & Senior Systems Analyst

- Wrote Java and C++ against large Parallel Oracle 8i databases (i.e. many terabytes, tens of millions of production transactions per day). Used JDBC, SQLJ, PRO*C/C++, and PL/SQL. Most of this programming was "database infrastructure", with much of the Java and PL/SQL running inside the Oracle database engines.
- Designed database and created software for an XML-based content management system for technical writers. Programmed the system with Enterprise JavaBeans, Java Server Pages, Java Servlets, and ColdFusion.
- Used formalized processes that included documenting designs and code — often using UML and Rational Rose, and holding code reviews.
- Created solutions for many long-standing database and development problems.
- Helped technical writers to research, understand, and express complex technical systems.
- Taught several introductory database and Java classes to employees.

MAR 2000 – JAN 2001; Maxcess Telephone & Internet; Orlando, Florida

Senior Developer/DBA

- Wrote Java, C++, and Perl to support operations, including:
    - A Trouble Ticket System with JSP and Enterprise Java Beans on an Oracle Application Server.
    - A Purchase Order System with Servlets and JDBC.
    - A Customer Service Interface on the Internet, with Perl CGI.
    - A proxy server Java application, used to "spy" on troublesome database interaction.
- Wrote Oracle PL/SQL, and debugged PL/SQL in commercial database software.
- Helped other developers with difficult or time essential problems; helped other developers with advanced SQL programming & debugging.
- Designed and implemented Oracle, Sybase, and Informix databases on Solaris and NT.

JUN 2000 – FEB 2001; Training Solutions Group; Orlando, Florida

Oracle Instructor (Part-time Evenings and Weekends)

- Taught "Advanced Database Design with Oracle", which consists of relational theory, SQL, and PL/SQL. Students were usually computer technicians of various backgrounds who had successfully completed at least three prior database courses.
- Taught Oracle DBA certification exam preparation classes.
- Installed and configured all Oracle servers and clients.
- Handled negotiations with Oracle for software licensing.

SEP 1996 – MAR 2000; Coleman Research Corporation; Orlando, Florida

Database Developer / Administrator

- Wrote many HR-oriented web applications with Java Servlets, Java Applets, and JDBC.
- Designed databases and back-end systems, including:
    - A Java application with JDBC and JavaBeans that synchronized a Sybase database with a VAX/VMS database. It read recent updates from Sybase, opened a telnet session to the VAX application, and entered the updates into user screens.

    - A Java application with JDBC that reads a COBOL program's source code, creates a relational database with a similar structure, then copies the COBOL program's data into the relational database.
    - A Perl CGI web-application security system.
    - Several MS-Access applications, and programs that integrate with MS-Access.
    - A custom application installer in Visual C++.
    - A web application framework for Oracle.
- Taught several corporate computer classes — both for end users and for fellow programmer/analysts.

JUN 1993 – JUL 1996; Lockheed Martin Electronics and Missiles; Orlando, Florida

Network Administrator / Programmer

- Wrote network & database oriented programs using Visual Basic, FoxPro and Clipper.
- Implemented & maintained file and print services for HR.
- Troubleshooter for any HR hardware or software problems.

MAY 1989 – JUN 1993; Lockheed Martin Electronics and Missiles; Orlando, Florida

Computer Technician

- PC repair duties and light programming.

1989 – 2015; Self Employed; Central Florida

Ballroom Dance Instructor

- Taught credit classes at University of Central Florida for 9 years.
- Primary instructor for The Dance Club of Central Florida for 20 years.
- Contracted for many clubs and organizations.
- President of Dance Club of Central Florida during the year 2000.

1985 – JUN 1988; Chelsey Surplus Insurance; Orlando, Florida

Programmer

- Wrote various types of software such as:
    - A program that dialed-up State of Florida systems to pull moving violation records.
    - A front-end that integrated with TELEX to get quotes from insurance companies in London.

1983 – 1985; Forest Lake Academy; Forest City, Florida

Programming Assistant

- Wrote various types of software such as:
    - An artificial intelligence demonstration that carried an English conversation with a human being.
    - A bar-code reading system later used by the school's cafeteria and library.
- Assisted students in the programming lab.
- Graded programming tests and projects.

Education

- B.S. Computer Science; University of Central Florida
- Post-grad Comp-Sci studies w/ emphasis on Artificial Intelligence; University of Central Florida
- Oracle Database Administration; Diversified Computer Consultants, Orlando Florida
- Sybase Database Administration; PowerCerv University, Orlando Florida

Citizenship

- USA Citizen
- Currently employed in Ireland with a permanent work permit
- Currently applying for Irish citizenship