Kelly Justin Wilson

Software Engineer | Structural Engineer | Architect

Trained in architecture, structural engineering, and computer science, these passions are applied to develop software applications.

WORK EXPERIENCE

Founding Engineer — 4/2024 – PRESENT

ARCHENGEL, LLC - Berkeley, CA (Remote)

- Startup specializing in developing web applications to streamline AEC workflows so clients can increase their project acquisition, profit margin, design flexibility/fine-tuning, while reducing overhead.

Selected Projects:

- **SADE: Structural Analysis + Design Engine:** *[Node.js, Typescript, AWS, Vercel, PostgreSQL, Next.js, React, tRPC, Zustand, Zod, Winston Jest, Playwright,, Turborepo, RabbitMQ, YOLO, OpenCV, Python, PyTest, …]*
  - Led architecture and development of a proprietary structural analysis platform comprising 10+ microservices, delivering complete building designs in seconds while spearheading ongoing development initiatives
  - Engineered type-safe full stack architecture with Next.js/ React, PostgreSQL, Zod validators, and Drizzle ORM—ensuring data integrity and reducing errors through consistent type enforcement across all application layers
  - Engineered advanced 2D/3D computational geometry visualization system enabling real-time rendering of structural analysis results and seamless user design interactions
  - Pioneered an AI/ML/RAG computer vision pipeline that automatically extracts critical structural data (walls, windows, doors) from PDF building plans, automating inputs for structural analysis services
  - Implemented robust event-driven architecture using WebSockets and RabbitMQ, enabling real-time synchronization between client interfaces and the design engine with optimized state management
  - Established comprehensive technical foundation including architecture design, CI/CD pipelines, testing frameworks (TDD) (jest/playwright), and scalability patterns aligned with domain-driven design principles
  - Collaborated directly with co-founders to translate business strategy into technical roadmaps, ensuring development priorities aligned with company milestones and market objectives

Software Engineer — 9/2022 – 03/2024

OUTER LABS, INC - Covina, CA (Remote)

- 50+ person startup that specializes in converting real estate/workplace logic/heuristics into reactive web applications for big tech (Google, …)

Selected Projects:

- **CLAi Studio: Programming App:** *[NestJS, TypeOrm, Typescript, GCP, CloudSQL, PostgreSQL, React]*
  - Prepared epics for FE & BE feature work to convert a custom 30+ tab google sheets doc into a web-based workplace programming application used nationwide.
  - Developed 50+ production-quality React components for a highly interactive UI using best-practices for modularity and tested with React Testing Library and Jest.
  - Co-authored an infrastructural feature to decrease time spent writing migrations to update BE logic by 99%.
  - Revised and streamlined deployment documentation/process to reduce production deployment process and onboarding by 50%.

CONTACT

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SKILLS

Programming Languages:
- Python
- Typescript / Javascript
- Golang
- C#
- MATLAB
- CSS / HTML
- Git / Git Bash

Version Control:
- GitHub / GitLab
- Docker

Frameworks, Libraries, & Runtimes:
- Node.js
- ExpressJS
- NestJS
- Next.js
- React (+ Libraries: Recoil, …)
- Flask
- GraphQL
- Three.js

UX/UI Prototyping / Design Systems::
- Figma
- LucidChart / Miro
- Adobe XD, Photoshop
- Material UI

Data(- base, visualization), ML:
- Tableau
- D2.js, D3.js, & ChartJS
- PostgreSQL, PostgREST, Psycopg2
- TypeORM / Prisma / Drizzle (ORMs)
- MongoDB
- Pandas, Scikit-Learn, & Numpy
- YOLO, OpenCV, GPT-4 (openai API)

Modeling / F.E.M. Softwares:
- Revit, Rhino3D, AutoCAD, Adobe
- RISA 3D, Etabs, SAP2000, EnerCalc, …

EDUCATION

THINKFUL
Full-Stack Development Bootcamp
Remote

UC Berkeley
M.S: Structural Engineering
M.Arch: Architecture / Computational Design
Berkeley, CA

Lehigh University
B.S. Structural Engineering
Bethlehem, PA
B.Arts: Architecture
Minors: Computer Science & Theatre
Bethlehem, PA

- **Calibrator / OneWBS:** *[Golang, Typescript, Apollo Client, GraphQL, React w/ Recoil, Firestore]*
  - Orchestrated epics and led development to enhance app performance/functionality by adding 3+ features to increase user adoption by 50%.
- **Clay Briefs / Designs** *[Golang, Typescript, Apollo Client, GraphQL, React, Firestore, Three.js, React-Three-Fiber]*
  - Added a feature to import custom 3D building geometry for spatial programming analysis using rule-based algorithms to increase user adoption by 25%.

Engineering Manager 6/2018 – 9/2022
Structural Engineer / Software Developer 6/2015 – 6/2018

Projectfrog - San Francisco, CA (Remote during/ Hybrid after COVID)

- 25+ person fast-paced, cross-functional startup in the AEC space that developed a building as a product (ICaaS) delivery platform targeting the education, quick service restaurant, banking, and retail industry.

Selected Projects:

- **Frog Price Estimator (FrogPE)** *[Python, Scikit-learn, Pandas, Numpy, PostgreSQL, Javascript, JQuery, & Flask]*
  - Restructured and parsed 8+ smart-sheets into cleansed datasets for feature engineering using K-Nearest Neighbor, Random Forest, and Linear Regression ML methods.
  - Co-developed a ML web application that predicted wall panel price per square foot in wood and cold-formed steel from user input that saved ~40 hours of manual research/correspondence per project.
  - Prepared leadership with metrics that resulted in an increase in projects by 40%.
- **Revit - Construction Document / Component Model - Automation (RCDA/RCMA)** *[Python, Revit API, C#, WPF]*
  - Automated CD set content that minimized workflow by 8 hours per project.
  - Updated model automatically to reduce modeling/drafting overhead by 16 hours per project.
  - Established direct connection to engineering analysis that influenced building models and reduced the QA-QC process by 90%.
- **RevitToSaw (R2S)** *[Python, Revit API, C#, WPF]*
  - Produced project panel schedules, cut-lists, updated/labeled shop drawings, and data files consumed by third-party vendor saw-cutting software in minutes.
  - Decreased manual data processing by 32 hours for each project.
- **Structural Analysis Engine/Service (SAE/S)** *[Typescript, Javascript, NodeJS, ExpressJS, AWS S3 + EC2, Excel & API, React, ChartJS]*
  - Conceptualized, supervised, and co-engineered a back-end application that performed full-building structural analysis/design saving 24-36 hours of engineering work per project.
  - Implemented real-time structural validation and reduced time spent confirming client/customer design proposals by 99%.

PROFESSIONAL LICENSURE

CA Seismic Exam (Passed).
NCEES PE Exam (Passed).
NCEES EIT Exam (Passed).