# Zachary de George

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Software, Computer, and Electrical Engineer / Full-Stack Software Developer

## PROFESSIONAL SUMMARY

Results-driven Software, Electrical, and Computer Engineer with 8+ years of experience in full-stack web and mobile development, specializing in cloud-based API applications for responsive websites, iOS, and Android applications. Proven track record in embedded software engineering within the international automotive industry, including senior roles at BOSCH within ISO 26262 ASIL D environments, and R&D work at DENSO. Adept at managing end-to-end project lifecycles—from requirements and architecture through implementation, testing and deployment—using Agile, CI/CD, and AWS. Dual BSE degrees in Computer and Electrical Engineering from the University of Michigan–Dearborn, graduating with highest distinction, Tau Beta Pi and Eta Kappa Nu honors, and recognized as a 2013 University of Michigan “Difference Maker” and overall Senior Design Competition winner. Demonstrated ability to work within and lead teams, deliver innovative solutions, and excel under high standards of quality and safety.

## WORK EXPERIENCE

**AS3SIX (Formerly AS3ICS)** *Michigan, USA*

**Founder / CEO** *December 2020 - Present*

- AS3ICS is an acronym for Application *Specific Safety and Security Integrated Consultations and Solutions*, later stylized to AS3SIX (pronounced “Asics", like the shoe company).
- AS3SIX is a research and development think-tank for my various entrepreneurial endeavors, which range from software and web projects, to research and development into the next generation of electromagnetic technology.
- Currently have one patent pending with the USPTO, for a new electromagnet, which was done 100% pro se and successfully met all requirements for the US patent intake process. Soon to file the PCT (International) application for the invention. Officially patent pending.
- Many 10,000’s of lines of code produced, serviced, and maintained for web and native based mobile applications and platforms utilizing Angular 2+ and React frontends, with express as well as GraphQL APIs, in a CI/CD environment on AWS, utilizing automated deployments via code pipelines, enforcing coding best practices with static code analysis while maintaining a 90% frontend and backend testing coverage on production products.
- Ventures into VIBE coding utilizing ChatGPT to rapidly design and deploy websites and coding projects using AI supported code generation and analysis allowing for projects that used to take days or weeks to be prototyped in a hours, or even minutes.

**Technologies**: AI, ChatGPT, Codex, Node, TypeScript, MySQL, MongoDB, Express, GraphQL, React, Angular 2+, Native iOS, Swift, AWS (IAM, Route53, EC2, CodePipeline, Elastic Beanstalk, Lambda, Step Functions, RDS, CloudFront, CloudWatch, VPC, S3, etc.), CI/CD Development Environment, VS Code, Postman, ChatGPT, Xcode, SPICE, Patent Law, Oscilloscopes, Technical Writing.

**BIGGBY Home Office** *East Lansing, MI*

***Full-Stack Software Developer*** *October 2021 - Present*

- Lead developer for BIGGBY's online marketplace for ordering and tracking mobile orders to 300+ cafes located regionally across the entire east coast of America.
- GraphQL, Apollo Server API backend with automated code pipeline to AWS Elastic Beanstalk for load balanced deployments. Modern React frontend web application with automated code pipeline to S3 and CloudFront deployments.
- Software developed in an Agile Software Development environment with a small team of developers.
- Provided support services for the 300+ of franchises of BIGGBY that relied on our software and services for point-of-sale software and transactions inside of store.
- Personally responsible for bi-weekly presentations to corporate and marketing divisions on progress of Online Ordering updates and roll-out, written and presented in a web app that I designed and built myself (Ziggy).
- Ability to maintain and service legacy applications written in various frameworks and languages using many different protocols and services.

**Technologies:** MySQL, GraphQL, React, AngularJS, Node.js, AmazonAWS (IAM, Route53, EC2, CodePipeline, Elastic Beanstalk, Lambda, Step Functions, RDS, CloudFront, CloudWatch, VPC, S3, etc.), Docker, CI/CD Agile Development Environment, TypeScript, Microsoft Teams, VS Code

**TIMELINE SOFTWARE (formerly NEXT DAY PROJECT)** *Ann Arbor, MI*

**Co-Founder / CTO** *September 2015 - January 2019*

- Developed and deployed commercial native iOS Field Service Automation application, Timeline Facilities Management (Timeline FM), to the Apple App Store using cloud based Node/Express API deployed on AWS.
- Automated location services that autonomously generated timesheets based on work locations and tracked reimbursable travel between locations.
- Application developed in Swift and included over 50,000 lines of custom Swift code, along with with UI/UX design and implementation.

- Contracted by staffing company for use in Chicago Public School Systems, and contractors of SE Michigan Meijer's stores.
- See demo videos in Video Portfolio below.

**Technologies:** Native iOS Development, MongoDB, Express, Node.js, Amazon AWS (IAM, Route53, EC2, S3, etc.), Swift, TypeScript, Postman, Xcode, VS Code

**ROBERT BOSCH AUTOMOTIVE STEERING LLC** *Plymouth, MI*

**Senior Software Engineer** *April 2015 - January 2018*

- Advanced embedded software development in accordance with ISO 26262 standard on an ASIL D automotive component found in roughly half of Ford's fleet, globally.
- Conception, design, implementation, and testing of C modules in an embedded RTOS environment, including a custom module allowing for 40kb of ROM variables to be tuned at one time using a single A2L tuning file in a micro-controller with only 8k of internal tuning RAM (Emulated Tuning).
- Memory map design and implementation, containing 3 levels of boot loaders, application code, SDK packages, hardware library integration, customer blackbox code blocks, and up to 5 blocks of partitioned tuning variables.
- Upkeep and modification of internal and customer build environments, including Makefiles, batch files, python scripts, and other proprietary scripting languages
- Error handler and UDS services expert, which included updating a production release hex file using only HexView and the compilation map file to fix diagnostic code mapping when integrator used wrong configuration file on a production release.
- Integration and configuration of CAN drivers and Ford customer boot loader.
- Configuration of micro-controller, including oscillator frequency, dividers, and PLL values for RTOS functionality and CAN driver Baud rate.
- Integration and source control management using IBM Rational ClearCase
- Create completed software releases for use in the steering wheels of all Lincoln MKZs, Ford Fusions, Ford Edge's, and multiple other international vehicles. CD-4 Platform.
- Define the software integration strategy with the software project leader
- Version control management using IBM Rational ClearCase
- Ongoing responsibilities to automate and improve the integration process
- Develop detailed software from design requirements
- Implement software modules
- Develop module test specifications
- Perform reviews (design, code, and tests)

**Technologies:** Embedded C Development, Windows Build Environment, Scripting Languages such as Python and other proprietary languages, Vector CAN Tools, Renesas Steermic 2/3 Microcontrollers, Green Studio, CAPL Scripts, HIL

**MITSUBISHI ELECTRIC** *Northville, MI*

**Electrical Engineer / Account Manager** *March 2014 - April 2015*

- Engine controller hardware specialist, working on development and release of Fuel Injector Control Module (FICM) used in the Chevrolet Corvette
- PCB review and problem solving analyses with client DREs
- Handling of production validation tests including environment, electrical and EMC testing.
- Account manager for sales to Mitsubishi Motors

**DENSO** *Southfield, MI*

**Apprentice Engineer** *April 2013 – December 2013*

- As the apprentice I was the only engineer in this group that could complete both the hardware and software requirements of projects, allowing me to take on entire projects independently.
- Used C# and the .net framework to create applications that interfaced with embedded systems, to visualize, test, debug, and tune complex software and hardware systems.
- Created various native Android applications in Java for work assignments and additional extra-curricular projects for the group.
- Developed a custom algorithm to filter and convert exponential trunk position data by taking the derivative of an exponential curve produced by the A/D position sensor into a straight line, so then after performing some transforms a simple threshold could be applied with great accuracy and performance to detect if an obstacle was present while trunk was closing.
- Developed API in C++ for Oktal Scanner Studio vehicle simulator to monitor, modify, and display information in live simulations, as well as created a native Android app in Java to utilize and interface with the API.

**UNIVERSITY OF MICHIGAN** *Dearborn, MI*

**Tutor and Teaching Assistant** *September 2012 - December 2013*

- Teaching Assistant for both the introduction and advanced C and C++ electrical and computer engineering programming classes.
- Graded assignments and quizzes, populated student grades.
- Held weekly scheduled open tutoring sessions to help students with assignments and projects
- Performed guest lectures on Android for creating mobile applications
- Conducted *actual* lectures in C & C++ classes when a Professor had an unexpected sick leave (Prof. Paul Watta - https://umdearborn.edu/paul-watta).

**EXTRACURRICULARS**

**Intelligent Systems Club (Robotics Club)**
*University of Michigan – Dearborn*

- President — *January 2013 – December 2013*
- Vice President — *January 2012 – January 2012*

**Tau Beta Pi – Engineering Honor Society**
*Michigan Iota Chapter*

- Vice-President — *April 2013 – December 2013*
- Treasurer — *January 2013 – April 2013*

**Autonomous Robotics Competitions**

- Competed in 5 autonomous robotic competitions, finishing in the money in 4/5 of the events.
- Team finished 2nd overall at the Institute of Navigation Autonomous snow-plow competition earning $4,000 for my school in prize money.
- Team finished 2nd overall in International Ground Vehicle Competition held annually at Oakland University.
- Robots used completely custom C code, refraining from using platforms such as ROS, involving many extra hours outside of classed and studies.
- Incorporated many different navigational strategies and techniques, including vision based navigation, wheel-encoder based dead-reckoning navigation, GPS navigation, and Lidar based navigation while integrating additional components such as PID controllers for load-balanced powertrain output (very important for snowplows) and obstacle avoidance.

*ION Autonomous Snow Plow Competition* — *St. Paul, MN*
*ION Autonomous Lawn Mower Competition* — *Dayton, OH*
*IGVC International Ground Vehicle Competition* — *Oakland, MI*

**SKILLS**

- Embedded Software Engineering
- Full Stack Software Development
- Frontend Web Development
- Backend Web Development
- Automotive Software Engineering
- Object Oriented Software Development
- Native Mobile App Development: Android (Java, Kotlin), iOS (Swift)
- Software Deployment
- Software Integration
- UI/UX Design
- CI/CD

- Electrical Engineering
- Computer Engineering
- Prototyping
- Technical Objective Based Problem Solving using Engineering
- Documentation Writing & Reports

**LANGUAGES/SOFTWARE**

- C/C++
- Typescript
- Python
- AWS (IAM, Route53, EC2, CodePipeline, Elastic Beanstalk, Lambda, Step Functions, RDS, CloudFront, CloudWatch, VPC, S3, etc.)
- GraphQL
- Angular 2+
- Node.js
- JavaScript
- mySQL
- MongoDB
- React
- Swift
- Native iOS
- HTML
- CSS/SCSS
- JSON
- Shell Scripts
- Composer
- Makefiles
- Linker Files / Map Files
- CAPL

**TOOLS**

- Visual Studio Code
- Visual Studio
- IBM ClearCase
- IBM Doors
- Git
- Xcode
- Postman
- MySQL Workbench
- MongoDB Compass
- Vector CAN Tools
- MS Office

- MS Teams
- Mac Office Applications
- Final Cut Pro
- Logic Pro
- Audacity

## EDUCATION

**University of Michigan - Dearborn** Dearborn, MI

*Bachelor of Science in Engineering* *April 2014*

*Electrical Engineering* *GPA 3.67*

*Bachelor of Science in Engineering* *April 2014*

*Computer Engineering* *GPA 3.67*

## HONORS

**Highest Distinction – GPA above 3.6 (highest possible distinction)**

**Tau Beta Pi – Engineering Honor Society (top 10% of engineers all disciplines)**

**Eta Kappa Nu – Electrical and Computer Engineering Honor Society (top 10% of ECE engineers)**

## AWARDS

**Annual CECS 2013 Senior Design Competition Overall Champions**

*University of Michigan - Dearborn*

- Based on senior design and paper presentation made to judges comprised from local industry leaders.
- Project was autonomous robotic snowplow constructed in cooperation with a team of mechanical engineers and wired and programmed by my team with a lidar based localization strategy that allowed the robot to navigate with cm precision. Also included custom PID controller for dynamic drive output based on speed of wheels and desired output so the robot could ramp power when pushing snow. The robot could tow an SUV, while 4 large college students were hanging off of it, and is still in use by the club over a decade later.

**2013 University of Michigan “Difference Maker”**

*University of Michigan*

- An award recognizing my work and outreach on campus as a teaching assistant and through the Intelligent Systems Club.
- Only 50 are awarded each year.
- Included University of Michigan hosted website and video on YouTube.

## STANDARDIZED TEST SCORES

**ACT** *October 2005*

**Science - 35/36 (99th Percentile)**

**Math - 31/36 (97th Percentile)**
**Essay - 10/12 (96th Percentile)**
**Composite - 29/36 (95th Percentile)**

**GRE** *August 2013*
**Quantitative Reasoning - 165/170 [790/800 old scoring] (95th Percentile)**

## Video Portfolio

Here are some videos of projects that have been collected over the years. I will be adding all new projects to this playlist, as time permits, God willing, and don't mind all the videos of my music & guitar, as my music alter-ego Gadfly uses the same channel.

Zach DeGeorge's Video
Portfolio Playlist

## Conclusion

Thank you for taking the time to learn about my career and skill set. I hope I can make a difference on your team.

Thank you & Regards,

*Zachary DeGeorge*