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SUMMARY

I am Ali Akdurak B.Sc. computer engineer, experienced team builder and software architect. I have been professionally developing software since 2007, starting from the time before I got my degree. In the first 10 years of my career, I have worked in the defense and aerospace industry for R&D projects, ending my journey as R&D team leader and founding my own company Sensencall. I have joined Bab IoT after 3 year at Sensencall as COVID-19 ravaged the markets plummeting my own company. In the last years I have led the development and business efforts of Bab IoT being the only employee for more than a year. I am currently looking for new opportunities as an apparent difference in vision and objectives with my current board is troubling me.

I have designed and led teams that created military simulators from top to bottom including embedded software components, distributed large-scale systems, a wearable health care system and several IoT stacks which also included embedded software layers.

I am confident that I can envision any architecture from the web to embedded. I have considerable experience taking on challenging projects from the beginning to the finish line.

In my spare time, I like to build 3D printers, Geiger counters, air quality eggs and some other interesting projects from hackaday, DIY electronics and wearable technologies.

SKILLS SUMMARY

- 8 years of system architecture design and OOD experience.
- 8 years of Java and C# experience focused on desktop and backend development.
- 8 years of team building and leading experience.
- 3 years of NRF51 & NRF52 series development
- 4 years of ESP32 development experience
- 2 years of PIC / embedded development.
- Deep knowledge and experience with C++11, fairly experienced with C++17

PATENTS

TR Utility Model Patent: 2014/13612 Yaşam Kemeri - İnsanlarda düşme kaynaklı sakatlanma koruma kemeri[Yaşam Kemeri - Fall-related injury protection belt]

GRANTS

Tübitak 1512 Entrepreneurship Multi-phase Program 2015-2016

LifeCall Wearable EKG

Horizon 2020 SME Instruments 2016-2017

LifeCall Wearable EKG

Tübitak 1507 TUBITAK SME R&D Start-up Support Program 2016-2017

LifeCall Wearable EKG

Tübitak 1507 TUBITAK SME R&D Start-up Support Program 2019-2020

Radiofar - RF-based location tracking, control and real-time IoT platform development

In my career at Teksav Teknoloji I have participated in 5 other TUBITAK and 2 KOSGEB research projects in various roles from writer/proposer to simply engineering. The projects above were the ones I led from start to finish in all aspects and were officially responsible for.

WORK EXPERIENCE

CTO, Bab IoT A.Ş.

2021 ~ present

My engagement with Bab IoT has started with their offer of recruitment which included a shares and salary package for 4 years. I was responsible for a wide array of tasks including development of Jan and Nan line of products which are a BLE beacon and access oriented gateway. In my first year I produced 2 versions of Jan(Basic IO and Pro) with field testing

- Expert on M2M development. Created numerous systems of both embedded and control sides.
- Knowledgeable of image processing.
- Bluetooth (Bluegiga), PIC16 and PIC 18 series, cryptography with ATAES132A, UHF passive RFID, RS232, RS485, SPI, USB embedded implementation.

EDUCATION

Ege University

2012 - 2014

International Computer Institute

Computer Science Master Program.

GPA: 3.50 / 4 Dropped at thesis stage, founded a startup.

Istanbul Technical University

2009 - 2011

Graduate School Of Science Engineering and Technology

Interdisciplinary defense and aerospace program.

GPA: 3.75 / 4 Dropped at thesis stage, work relocation.

of some 80 units with our select customers. I also fully integrated our gateway product into the Idenfit HR suite in which an employee can gain entry via mobile application, mifare NFC or a BLE beacon in his pack. Our second year goal was to secure investment as we now had a working product that we can scale and design and develop a backend and frontend for “Access Donkey” which would enable us to sell our product standalone directly to customers. I have secured this investment from an American Investor(200K EUR) at the beginning of April 2022 and immediately started the recruitment process for a team. Up until this point **I was the only employee of Bab IoT**. I have created a budget and a plan for 12 months with a team of 5. A very obvious difference in vision and objectives have begun to appear between myself and the board that finally made me decide that I should be looking for new opportunities.

Bab.Nan
NRF52, C

Keynotes

- Standard BLE beacon based on NRF52832.
- Involved in all stages of mass production (> 1000)

Bab.Jan
ESP32, C++

Keynotes

- 120 units currently in use. 300 units in the production pipeline.
- Developed to have a single codebase to cover all versions of electronics
- Support Web API, BLE API, BLE scanning, OTP usage, a command bus which allows to separate hardware drivers from business logic in the embedded system.

Access Donkey

Microservice, Docker, ECS, AWS, .NET Core

Keynotes

- Analyzed the competition and designed it to be on a blue ocean approach.
- Microservice architecture with full dockerization currently deployed with CI/CD to AWS ECS.
- This project is fairly new with only 3 months of development in August 2022.

Izmir University Of Economics

2004 - 2009
Faculty of Engineering and Computer Science

B. Sc. Computer Engineering.

GPA: 2.83 / 4.00

INTERESTING FACTS

- Founder of the robotics society of IEU, Gave lectures on control theory and hands-on lessons from time to time.
- Has 2 linux(Ubuntu) servers at home for experimentation.
- Has an extensive electronics lab at home.
- Built 2 DIY 3D printers, MendalMax 1.5, Prusa 3i.
- Owns a small hydroponic greenhouse for experimental purposes.
- Long-term FRP Dungeon Master and have several self-written campaigns.
- Practiced European broadsword swordsmanship for a time.
- Amateur chess and Esports player with several small-scale achievements.

There are a number of established products in the access devices market but all of their products focus on mid-to-big B2B usage. Access donkey was designed for the small-to-midsize business and individual consumers market. For this purpose everything was designed to be done from the mobile phone making the web portal only for mass configuration. You wanted to register your new product, touch your phone to it. Does a guest need access? Just make him scan the QR code or if he has the mobile app touch the phone to Jan the device supports OTP access. Your employee needs to register a mifare card, instead of tedious card registration, make him touch his phone to any devices in your company then show the mifare card to the device. These features were all developed at the time of this writing. Backend was developed with a microservice approach with .net core, it's currently fully dockerized and deployed on AWS with CI/CD on a ECS.

Co-Founder, SenseNCall Medical Software A.Ş.

2014 ~ 2020

I co-founded SenseNCall as its CTO in 2014. Our main focus was on wearable medical technologies and IoT products.

SenseNCall's foundations were created at a Startup Weekend event. Our idea was to create a super comfortable and easy to use EKG wearable device. From there on, together with my partner Emre Özdoğan, we have won several innovation awards including the GE Health innovation challenge and the TÜBİTAK(The Scientific And Technological Research Council Of Turkey) entrepreneurship grant, which have provided us with the funds to start SenseNCall. We have created a working EKG wearable prototype with nano-silver coated textile electrodes in a year and a half. We have also finished three other R&D projects as an outsource turn-key technology provider. In 2018 we pitched the idea of creating a SaaS RTLS with a distributed systems approach to Patika Global Technologies A.Ş. They have provided the capital required to found the Radiofar brand with an initial investment and a 2-year contract.

Radiofar - Real-time location service

Monolithic, Java Spring, ESP32, NRF52, Google Cloud

Keynotes

- Led and trained 3 junior engineers for 2.5 years.

NOTES

- Have a driving license.
- Non-smoker.
- Married and have two dogs.

- Developed beacons that allowed two way communication(Video) and automatic upload of collected data to our gateways.
- Developed backend and embedded components to realize RSSI triangulation and real-time location tracking(Video) based on BLE RF power.

From initial envisioning to product sales and pivots, I have worked at every stage of product development for the Radiofar project. System was designed to work with GCP products such as Pub-Sub, App Engine, Cloud Dataflow. A simulator and quality assurance project was developed for tooling and benchmark purposes while the development for gateways and beacons was ongoing. After one year of development, we were able to start shipping demo kits that included 3 gateways, 3 beacons and a raspberry pi for our customers that wanted on-prem installation. Unfortunately this coincided with the start of the COVID-19 pandemic. We were forced to pivot our system's initial target market of offices and factories to become a covid social proximity tracking product. Sensencall had approximately 400 gateways and 2000 beacons around 2020 when our investors declared unable to continue their support and I accepted a recruitment offer from Bab IoT.

Termobil - stick-on thermometer

RSL10

Keynotes

- Acted as consultant project manager and trainer for an inexperienced team of 2.
- Worked on optimizing power consumption, memory retention and mass production tooling. Achieved sub 100na power consumption on average with full functionality.

I was hired as a team consultant and senior embedded developer for an ultra-low power Bluetooth thermometer project, tasked with training and managing a new team for about 8 months. Electronics and product design was made by the client company, but the project was completely stalled because of an inexperienced development team.

MicroGri - precise micro fertilization control system

Xamarin, ESP8266, PIC18

Keynotes

- Mechanical design for this project was done by the client, we have developed all electronic control systems and the mobile application.

Upon an R&D contract, we have developed a mobile phone controlled, micro fertilizer system which controls the fertilizer output from a tractor towed seeding equipment in a precise range of grams per meter.

VialCognito - chemotherapy bottle recognition

Java SE, Image Processing

Keynotes

- Low power device we used required extensive optimization for OCR success and responsiveness.
- A unique chamber with a rotating base, lightning and a high zoom camera was designed.

I have developed an image processing / OCR system to ensure that the right vials of chemotherapy drugs for the patient are used for the IV mixing. This system includes a unique hardware casing with RasPi inside for image processing purposes which then communicates with software on the PC to ensure the vials used are the ones that are intended for the patient.

LifeCall - wearable ECG system

Xamarin, Java EE, Java SE, Bluegiga BL113, PIC16

Keynotes

- Designed a full architecture from embedded to backend. Involved in all technical parts as our company had only one other employee who worked on the mobile application part.

Our startup is founded on the premise of developing a comfortable wearable ECG. I acted as the architect and developer for this project for a year with a grant from TÜBITAK (The Scientific And Technological Research Council Of Turkey). We have successfully developed a fully working prototype with nano silver coated electrodes. This system includes an ultra low power ECG device with BLE working together with the mobile phone to upload real time ECG to our web application. We were in negotiations with two interested parties for finalizing the product and going to market, which has unfortunately stopped due to the coup attempt in Turkey.

R&D Team Leader, Teksav Teknoloji A.Ş.

İzmir, Türkiye — 2009 ~ 2011 (Software Developer), 2011 ~ 2016 (R&D Team Leader), 2016 ~ 2019 (R&D Consultant)

Right after I graduated, I started working at the defense and aerospace R&D firm Teksav Teknoloji. I worked as a software developer for ~3 years before being promoted to the position of R&D team leader. My main responsibility was to design and work with the team on the implementation of software and hardware integrated projects. I led two projects which won grants from The Scientific And Technological Research Council Of Turkey (TUBITAK). I started acting as a R&D consultant for the firm in 2016 after I founded my own company SenseNCall.

AES3D - Small firearms training simulator

C#, C++/CLI, Ogre3D, Image Processing

Keynotes

- Designed as 6 reusable components which were later sold as separate libraries such as hit detection server(automatic calibration and laser image processing/thermal real shot processing) and ballistic calculations library.

I had acted as the team leader for the R&D effort on AES3D shooting training simulator. I have actively worked on a realistic, certified ballistics simulation and designed architecture of AES3D with 6 components on a standard 3 layer architecture. This architecture allowed us to license our laser detection server to an Egyptian firm in the same field generating additional income for our company. Our team also integrated the Ogre3D graphics engine and developed 360 degree multi-screen support for immersive shooting experience. Our system is now one of the few shooting simulators in the world that allows 120-180-360 degree interactivity.

GKON3G - Distributed remote control system for base stations

Java EE, Java SE, RasPi, Distributed System

Keynotes

- Worked extensively with RasPi systems.
- Provided solutions for advanced network techniques such as creating a reverse proxy server/tunneling service that enabled us to control devices behind GSM operator firewalls.

With our firm's electronics expertise in the field, our team has innovated for a remote control, security and telemetry system

with many distinct features. Our goal was to create a system that can read a base station's health status from antenna connection strength to communicating with various appliances within the station. We have developed a fully distributed application which uses ActiveMQ redundantly for messaging backbone and works on Glassfish 4 - J2EE server which allows us to scale and cluster our system virtually to any size. I worked on the architecture and development of this project for a year before we took our field tests with a leading GSM operator in Turkey. Our sensor reading system was able to read all standard alarm equipment, talk with both RS232 and RS485 appliances and had the ability to use modbus protocol. The word 3G in the name comes from the fact that our system has high connectivity which allows it to communicate via 3G, SMS, Landlines and internet with ability to fallback to alternative delivery methods whenever an infrastructure problem occurs.

ServisNET Service network control and quality system

Java EE, Java SE, Image processing

Keynotes

- Designed with hexagonal architecture approach to maximize code reusability between different platforms employed.
- Optimized and worked with low power devices that did QR Barcode reading and processing.

For Teksav's sister company SAFKAR, I was requested to design and develop a system to increase quality control capabilities with its 336 services all across Turkey and the world. I used an onion/hexagonal architecture approach to minimize special code needs for different platforms, completely severing UI and infrastructure from domain models. A main requirement of this project was to enforce the use of correct procedure among service personnel. Every service shop planned to have a RaspberryPi thin client or Android tablet to get a barcode of parts by a webcam, read temperature, pressure and vacuum information so that it can guide service staff on how to fix it. All information was sent to the HQ of Safkar for the R&D team to see on an in-house web application.

SFKontrol Train and truck AC control support system

Java EE, Java SE

Keynotes

- Main challenge was to provide a testing base for many different electronic cards with different scenarios which were solved by abstracting the whole process and creating a json definition for different cards which were then read by the system to apply testing and visualization.

Teksav manufactures close to 20 different AC control circuits, most of which are used on cold chain trucks and trains. For testing and configuration of these circuits I designed a highly modular software. It allows branding of the UI for different clients and ability to support a wide range of communication protocols with various devices. This system also has the capability of uploading error logs and usage data to a web application.

Laser Engagement System

Java EE, Java SE

Keynotes

- Worked on the backend for a real time process of 500 units in the field.
- Mixed sensory information for location tracking was developed (GPS+RF RSSI+Inertial analysis).

Designed and developed a software system to read data from soldiers in training wearing MILES(Multiple integrated laser engagement system) vest and weapons. System includes mission briefing, real time operational information processing and after action reviews. Details are omitted

CN235 CASA Simulated cockpit instruments

C#, MikroBasic, PIC18

Keynotes

- For simulated cockpit instruments, developed an interpreter for a very simple design language that defines cockpit instrument behavior. System was developed to read this information and control instrument as defined.

Acted as co-developer for embedded software and created

configuration and automated test software for simulated flight instruments. In total there were 17 different types of cockpit instruments. Details are omitted

ATAK Helicopter Simulated cockpit instruments
C#, MikroBasic, PIC18

Keynotes

- Created a single embedded application which simulated 23 different cockpit instruments.

We have developed embedded software and supporting software systems for simulated flight instruments for Turkey's national attack helicopter project. Details are omitted

UKAC Encrypted communication module
C#, MikroBasic, PIC18

Keynotes

- Key sharing and creation processes were developed using dedicated security IC's
- Diffie-Hellman key exchange was implemented.

This project encompassed developing encryption systems for RF communication. Details are omitted

Software Developer, Reha Elektronik A.Ş.
İstanbul, Türkiye — 2007 ~ 2009
Visual Basic .NET, MYSQL, Serial communication (RS232)

Keynotes

- Received ALIEN RFID Expert Certificate from ALIEN RFID, UK office.
- Worked as a professional while studying.

Designed and implemented the first UHF passive tag RFID car park management system in Turkey.

Software Developer, Uniteks A.Ş.
İzmir, Türkiye — 2002 ~ 2003
Visual basic 6, MSSQL

Developed a human resources software with Visual Basic 6. I was in my senior high school year at the time.