Martijn Decauter

Systems Engineer with Broad Expertise

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Portfolio

About me

Accomplished Industrial Engineer with over 15 years of expertise spanning software, mechanical, chemical, and electrical engineering. Proficient in managing full project lifecycles—from concept design and prototyping to rigorous testing and validation—consistently overcoming intricate technical obstacles.

As the driving force in R&D, I excel at converting innovative ideas into robust, practical solutions, fueled by a passion for hands-on development, creative problem-solving, and delivering impactful results across a wide range of industries.

In recent years, I've increasingly leveraged my technical expertise and communication skills to engage directly with customers, accompanying the sales team to client meetings and trade fairs. My ability to connect with diverse audiences—speaking fluently at both basic and advanced technical levels—allows me to explain complex concepts with clarity and enthusiasm. This approach has proven instrumental in closing sales deals, rekindling relationships with dissatisfied clients, and restoring their confidence in our solutions. By actively listening to customers' challenges during these interactions, I've gained valuable insights that fuel product improvements and spark innovative ideas for new offerings.

Renowned for my ability to identify solutions where others see obstacles, I thrive on thinking outside the box to devise simple yet powerful ideas. This knack for innovative problem-solving enables me to streamline complex challenges into effective, elegant solutions that enhance product performance and drive business success.

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Welcome to my portfolio, showcasing my work as an Industrial Engineer with over 15 years of experience. It highlights projects and skills in software, mechanical, chemical, and electrical engineering, alongside innovative problem-solving, client engagement, and my active involvement in sports and community, reflecting my commitment to growth and balance.

Innovative Endeavors

JetWing Project

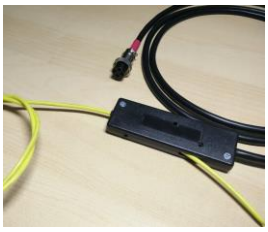
Control Systems Engineer – Martijn Decauter

In 2017, I was invited to join the groundbreaking JetWing Project, an innovative endeavor to transform wingsuit flight by integrating two micro-jet engines, enabling level flight and altitude gain.

My primary responsibility was designing and developing the fully digital control system—a pioneering departure from the analog controls used in similar projects. This system managed engine throttle, integrated critical safety features, and provided real-time status feedback. By leveraging constant digital feedback from the jet engines, the system enhanced safety through rapid response to potential issues, ensuring reliable and precise operation in high-stakes conditions.

The project achieved remarkable success, culminating in its first flight on May 6, 2017, followed by two additional successful flights.

Remarkably, the entire project—from concept to flight—was completed in just four months, a testament to the team's dedication and my ability to deliver robust, innovative solutions under tight timelines. This fast-paced development, encompassing design, fabrication, and testing, highlights my expertise in creating simple yet powerful systems for complex, high-risk applications, contributing significantly to the project's historic milestone in powered personal flight.

JetWing Project – Iteration 2

Control Systems Engineer – Martijn Decauter

In 2019, I rejoined the JetWing Project to develop the control system for its second iteration, pushing the boundaries of powered wingsuit flight. My role focused on engineering a compact, robust control system capable of supporting up to four jet engines—a significant advancement from the original two—while integrating a refined throttle input for enhanced precision and control. Through innovative design, I reduced the system's size to one-fourth of its original footprint, improving durability, incorporating a helmet with an integrated head-up status display, and delivering a professional, streamlined architecture.



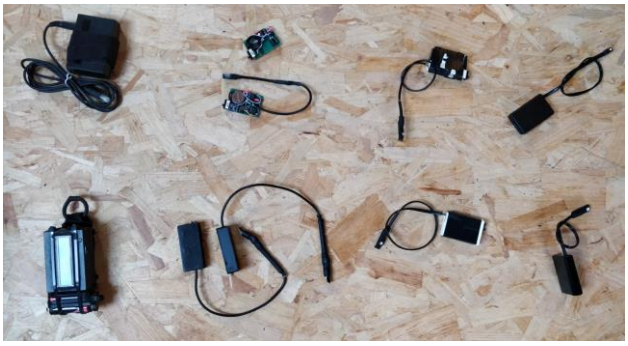
The flight setup was constructed using advanced carbon composite materials, optimizing strength and weight for superior performance. Rigorous wind tunnel testing validated the system's aerodynamic and operational capabilities. Regrettably, flight testing has been postponed following the tragic loss of project leader Jarno Cordia in a mountaineering accident. This project exemplifies my ability to craft sophisticated yet elegant solutions, blending out-of-the-box thinking with practical engineering to push the boundaries of human flight.


Spectrum – Skydive Altimeter

Electronics and Software Developer – Martijn Decauter

Since taking up skydiving in 2014, I embarked on a personal mission to apply my electronics and programming expertise to design a custom skydive altimeter, driven by a vision to introduce innovative features not found in existing market offerings.

This project began as a passion-driven challenge to push my technical boundaries and evolved into a sophisticated endeavor showcasing my ability to innovate and refine complex systems. Over the course of development, I built approximately ten prototypes, each iteration incorporating new hardware, enhanced features, and robust solutions to address bugs and potential failure points.



Currently, I am optimizing the final design for production, exploring pathways for commercialization to bring this unique altimeter to the skydiving community. This project not only deepened my expertise in electronics and software development but also played a pivotal role in steering my professional career toward these disciplines. The following images illustrate the evolution of my altimeter design, reflecting my commitment to transforming creative ideas into practical, high-quality solutions.

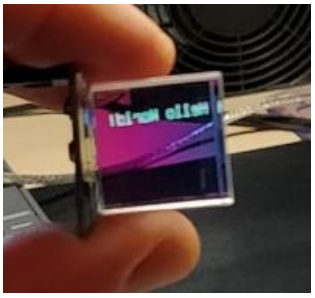
Wingsuit GPS Project

Electronics and Software Developer – Martijn Decauter

In 2016, inspired by the navigational challenges of wingsuit flying in cloudy conditions, I designed and built a custom Skydive GPS system to ensure reliable return to the dropzone under low-visibility conditions.

This practical solution, prioritizing functionality over aesthetics, utilized an Atmel AVR microcontroller, a rechargeable LiPo battery, a GPS receiver, and a 128x64 monochrome OLED display for clear, real-time navigation data. The initial proof-of-concept system was successfully flown on multiple occasions in full cloud cover, validating its effectiveness in real-world scenarios.

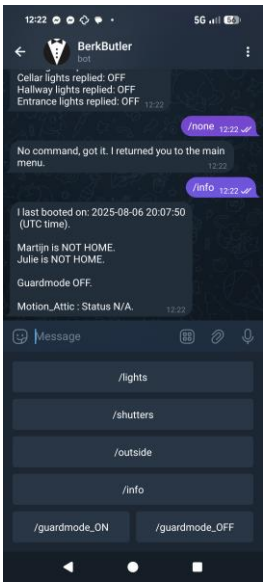
Subsequent prototypes explored integrating advanced head-up display (HUD) technology to enhance usability; however, time constraints and limited access to hobbyist-level HUD components prevented full development of this second iteration.



Home Automation Project

Electronics and Software Developer – Martijn Decauter

Upon moving into my new home, I embarked on a personal project to design a custom home automation system, leveraging my electronics and programming expertise to enhance convenience and control. I deployed Shelly units, flashed with Tasmota firmware, to manage light switches and power sockets throughout the house. A dedicated server, integrated with a Telegram bot, enables seamless remote control of these devices from anywhere in the world via a smartphone.



Additionally, I reverse-engineered the RF signal of my window blinds and utilized RPiTX with a signal booster to spoof these signals, allowing remote operation of the blinds without physical modifications to the existing system. This project showcases my ability to create practical, innovative solutions by combining off-the-shelf hardware, custom software, and creative signal manipulation to achieve efficient and cost-effective home automation.

Technical Expertise

System Engineering & Development

As a seasoned Systems Engineer, I have played a pivotal role in developing key technologies deployed worldwide, leveraging my expertise to create innovative, integrated solutions that address complex challenges. With over 15 years of experience spanning software, mechanical, chemical, and electrical engineering, I excel at generating novel ideas and synthesizing diverse systems—hardware, software, and interfaces—into cohesive, reliable designs.

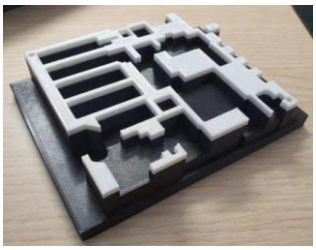
My strength lies in envisioning creative solutions and driving their development from concept to implementation, ensuring robust and practical outcomes for cutting-edge applications. Passionate about innovation, I communicate these ideas with clarity and enthusiasm, fostering collaboration and inspiring confidence among teams and stakeholders.

This ability to blend out-of-the-box thinking with disciplined engineering has enabled me to contribute significantly to transformative technologies on a global scale.

3D Printing & Additive Manufacturing

My expertise in 3D printing and additive manufacturing stems from a passion for leveraging cutting-edge tools to streamline design and prototyping processes. Since acquiring a Creality CR-10S in 2018, I have utilized this accessible platform to create custom parts, tools, and mounts, significantly accelerating project development and expanding my capabilities as a hobbyist engineer. This hands-on experience underscored the transformative potential of additive manufacturing in engineering, prototyping, and innovation labs.

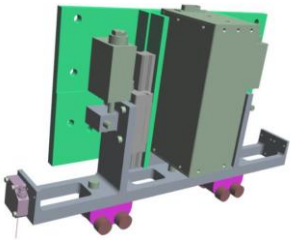
Professionally, I have worked extensively with mid-range Ultimaker 5S printers, harnessing their dual extrusion, high precision, and large build volume to deliver robust solutions for complex engineering challenges. My ability to design and produce tailored components has enhanced efficiency and creativity across diverse applications, from rapid prototyping to functional part production. By integrating 3D printing into my workflow, I continue to explore new use cases, driving practical innovation with a focus on precision and adaptability.

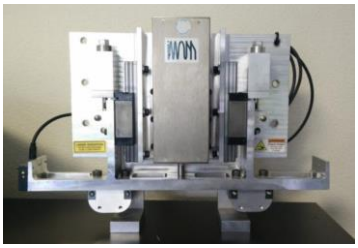


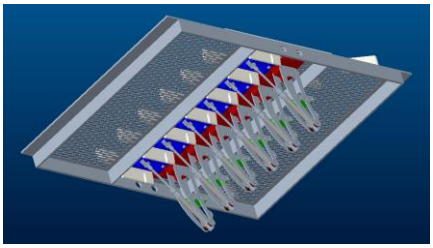
Mechanical Design & Engineering

Though mechanical design was not part of my formal education, I have cultivated significant expertise through hands-on experience in both professional and hobbyist settings, contributing to a wide range of mechanical systems. From designing simple clamps and mounting accessories to tackling more intricate mechanisms, I have demonstrated an ability to deliver practical, innovative solutions tailored to diverse engineering challenges.

My proficiency spans multiple CAD software platforms, including Ansys SpaceClaim, where I gained several years of experience, Autodesk Fusion 360, my go-to tool for personal projects, and PTC Creo, with which I have some working knowledge. These tools have enabled me to translate creative concepts into functional designs, optimizing for performance, manufacturability, and efficiency. This self-taught expertise underscores my adaptability and passion for integrating mechanical solutions into multidisciplinary projects, enhancing my ability to create cohesive, effective systems that drive innovation.



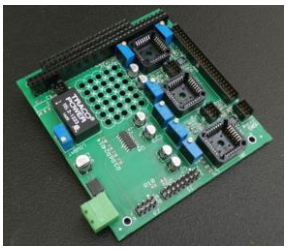




Electronics & Soldering

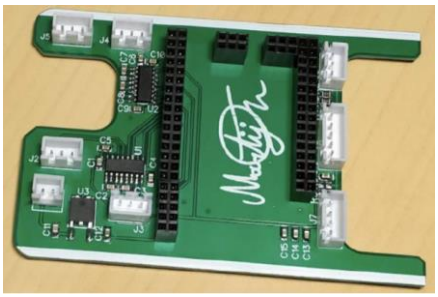
Driven by a desire to deepen my electronics expertise post-education, I began with a modest soldering iron, laying the foundation for a robust skill set that has grown significantly over the years. Through dedicated practice, I honed my soldering techniques, mastering precision and reliability in assembling and repairing electronic components.

Today, I utilize an advanced SMD soldering station, equipped with hot air and iron capabilities, enabling me to tackle intricate surface-mount designs and complex circuitry with confidence. This self-taught proficiency has been integral to my ability to develop innovative solutions across various engineering projects, from prototyping to final assembly. My pride in these skills reflects not only technical mastery but also a commitment to delivering high-quality, dependable results in electronics design and implementation, enhancing my versatility as an engineer.



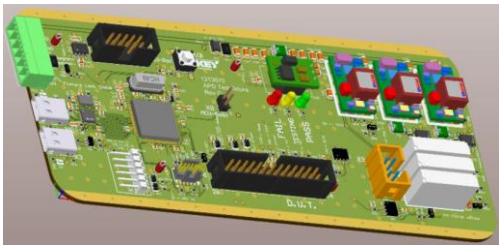
PCB Design & Layout

My expertise in printed circuit board (PCB) design, developed through professional engagements and personal projects, showcases my ability to create reliable, high-performance electronic solutions. I have designed a wide range of PCBs, from straightforward two-layer boards for simple applications to sophisticated multilayer designs requiring advanced techniques such as trace length matching and characteristic impedance tuning to ensure signal integrity and performance.



Proficient in multiple design tools, I rely on DipTrace for personal projects, leveraging its flexibility for rapid prototyping, while my extensive professional experience with Altium has enabled me to deliver complex, production-ready designs. Additionally, I have utilized Eagle at a previous employer, adapting to its workflow to meet project demands.

This versatility in PCB design enhances my ability to integrate electronics into multidisciplinary systems, delivering practical and innovative solutions that meet stringent technical requirements with precision and efficiency.



Programming & Software Development

My programming expertise, cultivated through professional roles and personal projects, reflects a versatile and adaptive approach to solving complex challenges with code.

My journey began in high school, programming a Casio pocket calculator to streamline math and physics calculations and even create simple games, sparking a lifelong passion for coding. Early in my career, I developed Excel macros in VBA to automate repetitive tasks, enhancing efficiency in data-driven workflows. Transitioning to more complex applications, I mastered C++ while developing innovative solutions, leveraging its robust capabilities to deliver reliable, high-performance systems.

My work in Python3, including building a Telegram bot for home automation and converting Python2 scripts, showcases my ability to adapt and modernize codebases. As a Systems Engineer at Key Technology, I programmed embedded systems in C for STM32 ARM architecture microcontrollers, using the ST Keil/Eclipse IDE to ensure precision in critical applications. Additional experience in Bash, JavaScript, and Golang further broadens my skill set, enabling me to craft practical, innovative software solutions across diverse platforms and industries.

Sensor Technology & Integration

My expertise in sensor technology, developed through extensive professional experience, centers on the precise application of strain gauges and accelerometers in demanding environments. I have worked with both weldable and chemical-bonding strain gauges, mastering surface preparation, installation, and wiring to ensure accurate data collection under challenging conditions, such as high-vibration settings and underwater applications.



Similarly, my experience with accelerometers, including Wilcoxon and Vortok models, encompasses designing custom mounting systems, performing installations, and managing wiring to achieve reliable performance in rugged environments. My ability to adapt sensor solutions to harsh conditions reflects a blend of technical precision and creative problem-solving, enabling me to deliver robust, effective systems for critical applications. This hands-on expertise enhances my capacity to integrate sensors into multidisciplinary engineering projects, contributing to innovative and dependable outcomes across diverse industries.


Community & Passions

Skydiving, Wingsuiting & BASE jumping

Since my first skydive in 2014, skydiving and wingsuiting have become a cornerstone of my life, blending adrenaline, discipline, and community engagement with skills that enhance my engineering expertise.

After completing the Accelerated Freefall (AFF) course to qualify for solo jumps, I pursued wingsuiting, logging 200 skydives to make my first wingsuit jump in early 2015—an experience that captivated me and fueled ongoing dedication.

In 2016, I expanded into BASE jumping, occasionally flying my wingsuit in mountainous terrain, embracing the challenges of high-stakes environments. These activities have honed my ability to remain calm and in control under intense pressure, enabling me to maintain a cool head and make critical, first-time-right decisions in high-adrenaline situations where precision is paramount.

My FAI D-license (Senior Parachutist) and certifications as a wingsuit Instructor from Intrudair and Phoenix Fly reflect my commitment, allowing me to mentor others in the skydiving community. This pursuit not only fuels my passion for adventure but also informs my engineering work, channeling the same focus, problem-solving, and composure into projects like custom altimeters and GPS systems, creating a unique synergy between technical innovation and personal discipline.

Tandem Skydiving & Instruction

My journey in skydiving took a significant leap in 2017 when, with over 500 jumps and an FAI D-license, I enrolled in a rigorous two-year course to become a skydive instructor. By 2018, I earned my instructor certification, followed by my tandem master qualification in 2019, enabling me to guide passengers and students through the exhilarating experience of tandem skydiving.

With over 800 tandem jumps completed, I have honed my ability to ensure safety and confidence in high-adrenaline environments, fostering memorable experiences for others in the skydiving community.

As an occasional dropzone operator, I take on the critical responsibility of overseeing operational safety, making swift, first-time-right decisions to maintain secure and efficient operations under pressure. These roles have sharpened my composure and leadership skills, paralleling the precision and problem-solving I apply in engineering projects. By sharing my passion as an instructor and tandem master, I contribute to the skydiving community while drawing on the same discipline and focus that drive my technical innovations.

Intrudair Partnership & Wingsuit Innovation

Since 2017, my collaboration with Intrudair, a Hungarian skydiving manufacturer, has deepened my engagement with the skydiving community and enhanced my technical expertise. Initially contributing through video work to promote their wingsuits, I progressed to becoming an Intrudair Athlete, representing the brand with passion and authenticity.

As a test pilot, I rigorously evaluate new wingsuit designs, providing critical feedback to refine performance and safety, often in high-adrenaline environments that demand composure and precise decision-making.

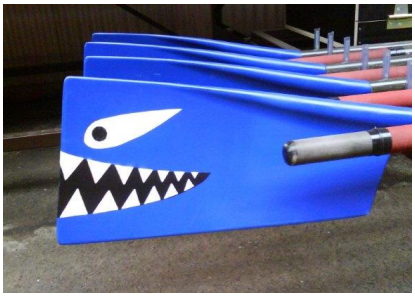
My advisory role extends to offering insights on product design and, occasionally, supporting Intrudair's military contracts, leveraging my engineering background to enhance functionality and reliability. Driven purely by belief in the brand and its people, my commitment has fostered a strong friendship with the owner, leading to regular visits to Hungary two to three times annually to collaborate and exchange ideas.

This partnership not only fuels my passion for wingsuiting but also mirrors the precision and problem-solving I apply in engineering projects, creating a seamless connection between my adventurous pursuits and technical innovation.

Rowing & Team Leadership

During the 2008–2009 school year, my passion for rowing fueled my active participation and leadership as team captain of the KHLim rowing team, culminating in a second-place finish at the 2009 Hasselt Studenten Regatta.

In this role, I drove team motivation and participation, planned weekly training sessions and teambuilding activities, served as the team's spokesman for media and press, and managed equipment to ensure peak performance. These responsibilities honed my ability to stay calm and make critical, first-time-right decisions in high-pressure environments, skills that parallel my skydiving pursuits and engineering projects.



Leading the team required fostering collaboration and resilience, qualities that continue to shape my approach to community engagement and technical challenges. My rowing experience not only deepened my commitment to teamwork and discipline but also reinforced my capacity to inspire and organize, contributing to both personal growth and the vibrant community spirit of the sport.

KHLim waxt regattaboot om nog sneller te roeien

HSR

6 mei 2009

Het blauwe team gaat dit jaar definitief voor de overwinning. Foto Serge MINTEN

Hasselt

Winnen op didactisch verantwoorde wijze. Dat zou de slogan kunnen zijn waarmee de KHLim-roeiers straks aan de start van de Hasselt Student Regatta verschijnen want de helft van de ploeg studeert aan het departement lerarenopleiding.

"Of het allemaal didactisch verantwoord zal zijn, laat ik in het midden", schatert ploegkapitein Martijn Decauter. "Maar het zal alleszins gekruid zijn met heel veel enthousiasme, motivatie en met een enorm doorzettingsvermogen. Echt, ik denk dat de KHLim-ploeg nooit sterker geweest is. Één plaatsje beter doen dan vorig jaar, toen we zilver pakten, volstaat. We roeien ons echt te pletter en we gaan voor de volle winst en zelfs als we dan als allerlaatste zouden eindigen kunnen we onszelf niks verwijten. Dan hebben we er in elk geval ons stinkende best voor gedaan."

"Aan onze ploeg zal het alleszins niet liggen. We hebben met Lotte Sijbers één echte roeister aan boord maar er zitten nog heel wat andere sportievelingen mee in het schuitje. De teamspirit is dan ook perfect. We zijn samen gaan paintballen, er is al een vergadering geweest om de tactiek bij te stellen en we gaan geregeld fitnessen en één keer per week roeien. Op 1 mei gaan we werken aan onze start en scharen we die bij en we gaan onze boot nog waxen zodat die sneller door het water zal klieven. Echt, we laten niks aan het toeval over, die Regattabeker 2009 willen wij absoluut winnen."

Of de KHLim daarin slaagt, weten we op 6 mei. Hopelijk schreeuwen stuurman Michiel Vanhoutte of zijn wissel Hans Grossi de KHLim-achtzitter met daarin een selectie gekozen uit Pieter Berghs, Martijn Decauter, Inge Denis, Hannelore Leurs, Jelle Palmaerts, Katrien Schreurs, Lotte Sijbers, Michiel Vanhoutte, Manuela Soccol, Maarten Tibau en Sylvie Vandermeeren naar de verhoopte winst.

DJ

Sports Shooting & Community Engagement

My passion for sports shooting spans a diverse range of disciplines, including pistol, rifle, skeet, long-range, and dynamic shooting, pursued both for enjoyment and in competitive settings. Over the years, I have honed my skills to achieve success in competitions, demonstrating precision and composure in high-pressure environments.

My international travels for shooting events have broadened my perspective and deepened my connection to the global shooting community. As a guest instructor for the “Women on Target” event in Milton-Freewater, Oregon, I shared my expertise to empower and educate participants, fostering inclusivity and skill development. A notable highlight was the honor of shooting with a Barrett M107A1, a testament to my engagement with advanced firearms.

Beyond participation, I heavily modify my own firearms, designing and manufacturing custom parts to optimize performance and functionality, blending my engineering skills with my passion for shooting. These modifications, mirror the technical innovation I apply in my projects. Competitive and high-stakes shooting environments have sharpened my ability to remain calm and make critical, first-time-right decisions under pressure, skills that echo my skydiving pursuits and engineering work. Through active participation, instruction, and technical customization, I contribute to the shooting community while fostering a synergy between my adventurous spirit and problem-solving expertise.

Early Careers & Foundations

Student Roles

During my higher education from 2004 to 2010, I held various student positions that developed my work ethic, adaptability, and ability to perform under pressure. These roles built foundational skills in responsibility, teamwork, and decision-making.

- **Febelco CV, Courier (Work Student), February 2008 – September 2010**
  Managed three daily pharmaceutical delivery runs in the Sint-Truiden and Liège areas every Saturday (06:00–17:00), ensuring timely and accurate deliveries under tight schedules, honing time management and composure in high-pressure settings.

- **Chess Café Hasselt, Barman (Student Job), September 2007 – February 2008**
  Served customers in a fast-paced environment, developing strong client engagement and multitasking skills to maintain efficiency and rapport.

- **Febelco CV, Supply Depot (Student Job), Summer 2007**
  Stocked racks, prepared courier orders, and handled call center inquiries, enhancing organizational skills and customer interaction under demanding operational timelines.

- **Kinepolis Group, Production (Student Job), 2006 – September 2007**
  Single-handedly managed semi-industrial popcorn production, demonstrating reliability and precision in a high-volume, fast-paced setting.

- **Aquafin NV, Maintenance and Analysis (Student Job), Summer 2006**
  Conducted inspections, maintenance, and effluent analysis at a water purification plant, applying technical precision to monitor and ensure operational performance.

- **GB, Cashier and Stocker (Student Job), Summer 2005**
  Operated as a cashier and filled racks, building teamwork and time management skills in a retail environment.

- **Contact GB, Cashier and Stocker (Student Job), Summer 2004**
  Performed cashier duties and stocked racks, developing foundational skills in customer service and operational efficiency.

These roles honed my ability to stay calm and make critical, precise decisions in high-pressure settings, skills that strengthen my engineering problem-solving and precision.

Mobile Device Repair & Customization

From 2012 to 2016, I dedicated significant time to repairing and customizing over 250 mobile devices, including iPhones, iPads, and high-end Android phones, primarily to assist friends and family. This hands-on work involved troubleshooting complex hardware and software issues, executing precise repairs, and designing custom modifications to enhance functionality and aesthetics. The process honed my technical precision and creative problem-solving, requiring me to stay calm and make critical, precise decisions in high-pressure troubleshooting scenarios.

Occasionally, I continue to support friends with repairs, sharing my expertise to strengthen community ties. My work reflects the same meticulous approach I apply in engineering tasks. This experience deepened my passion for electronics and built a strong foundation in technical troubleshooting and innovation, complementing my broader professional skills.