

# Kühn András Gábor

## Machine learning oriented CV

See the rest on my [GitHub page](#):

<http://github.com/kuhnandrasgabor/cv>

## Personal info

- **Location:** [Szeged, Hungary](#)
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- **Visuals:** [Gallery](#)



## Professional experience

I'm a professional with over a decade of diverse experience spanning various fields, ranging from **machine learning** and **web development** through **3D visualizations** to professional **photography**.

I have experience in leadership roles in **smaller teams**, including CEO of a tech startup, where I led a complex multiplayer **online game development** project, and later as CTO of a startup doing **AI powered industrial data management** and SaaS solutions for aviation MROs and other heavy industries.

I have some experience in business negotiation and project management, but am my *very best* at **creative design and problem-solving**, where I can make the most of my wide spanning technical background I gathered throughout my work and hobbies. I am a very firm believer in the pareto principle, and try to equip myself with knowledge among various fields, while relying on specialists in matters where I am not an expert of.

Thanks to my english skills, I excel in multicultural environments.

Committed to **continuous learning and improvement**, with an eye for detail and a passion for technology and innovation, I try to use technology to improve all aspects of my personal and professional life, such as using AI tools when justified/appropriate.

### 2020 – Present: Data Science, Machine Learning, Full-Stack Developer & Acting CTO at Pzartech Ltd.

I Initially joined as a freelance developer, wound up acting as CTO, overseeing all development and architecture decisions.

I was tasked with the **re-development** of a **data management software** prototype and subsequent deployment as an **SaaS solution** designed for aerospace MRO's and heavy industry.

During my tenure I was collaborating on strategic planning, technical decision-making, and future company growth, including equity stake for my contributions.

A few bigger milestones include an **SAP S4/HANA** integration prototype, **ElasticSearch** analytics prototype, **Azure storage** management with media services **video streaming** prototype, and the project's core value add: development and implementation of **visual search and OCR** solutions.

- Full-stack web development on .Net Core, Blazor, Razor, MongoDB, MAUI
- ML/AI development with Python
- Image classifier and OCR system training and deployment
- CI/CD with Azure DevOps, Azure Portal
- Version control with Git through Azure DevOps

## Web based data management software

I was in charge of developing a web-based data management system, focusing on MRO and industrial clients, enhanced by AI search tools.

### Skills used/developed

- C#, Python, HTML
- .Net Core, Blazor, Razor, MongoDB, MAUI
- Azure DevOps, Azure Portal, CI/CD
- Version control with Git through Azure DevOps

## Machine learning and training

I was tasked with improving the results and scope of the **image classifier network** we were using for **industrial part recognition**. The original idea proved to be too difficult to optimize in the long term, so with a little push from a consulting expert I began to train a new network from scratch, marking my foray into the world of machine learning.

Increasing the difficulty was the fact that the **data quality was sporadic, without** a realistic **chance to re-capture any video** footage, and several mislabellings both in the training and testing data, so I had to put a lot of effort into visualizing the performance of each training run to find out what the issues were.

Uncovering these errors in the datasets forced me to engineer various ways to detect and fix them, ultimately creating an **ingestion and processing toolchain** in python, utilizing several steps of **quality assurance** along the way, like custom neural networks trained to detect issues and mark files before handing them off to later processing steps.

The result was a model that proved capable in real-world tests and performed well above the expectations: 84% accuracy in single-image top-4 scenarios, and **perceptually 100% accuracy** as the system was upgraded to enable multi-image prediction.

Another task of mine was the prototyping of an **OCR software** solution, where we had to detect writing from stamped machine parts to hand-engraved dotmatrix serial numbers.

While this project never got out of the prototype phase, the solution I came up with, (along with the pre-processing, hyperparameters, and prospective fine-tuning method) resulted in our version mostly keeping up with, and in some more niche and difficult cases even surpassing industry standard solutions, such as Azure's AI Vision. The fine-tuning solution's prototype was also completed: a **synthetic data generation script** written from scratch for Blender, opening the gateway to fine-tune the model incredibly well for specific scenarios if needed.

- ML dataset generation
  - Raw video processing, segmentation, enhancement, evaluation for semi-synth data
  - Realistic generation of labeled synthetic images
  - Dataset management and tooling
- ML Training
  - Image quality assessment network for training data evaluation
  - Bounding box generation network for training data evaluation
  - Image classifier network for industrial part recognition
  - Optical character recognition system
- Integrating with existing SaaS architecture in Azure's cloud
- Performance charting and analysis

## Skills used/developed

- C# for the API, but mostly Python for training and inference
- FastAi, PyTorch, TensorFlow, Jupyter notebooks and Paperspace Gradient
- Flask, seaborn, matplotlib, pandas, numpy
- Docker, Docker-Compose

## 2011 – Present: Freelance Professional (Photography, 3D Graphics, Webdesign, Architectural Visualization)

Worked on a multilanguage checklist app for iOS, a PHP Magento-based online store, interactive, real-time 3D architectural visualization projects, 3D modeling and animation, branding, advertising, logo and web design and as a freelance photographer.

### *3D modelling and visual effects*

I had the opportunity to work on some 3D visualizations for interactive training material related to natural disasters.

[Go to 3D gallery](#) [↓]

### **Interactive Architectural Visualization**

Real-time walking simulation in Unreal Engine 4, with interactive elements.

[Go to interactive gallery](#) [↓]

### **Realistic Architectural Visualization**

Quick and dirty, but still reasonably realistic renders of two gardens on a two-day deadline.

[Go to realistic gallery](#) [↓]

## 2014. – 2020. Stoneglass Labs KFT., Szeged (CEO)

Headed a software development team in a small company developing an ambitious online multiplayer game.

### *Stars End (MMORPG game software project)*

We were developing a real-time Sci-Fi massively multiplayer online role-playing game.

[Go to starsend gallery](#) [↓]

## Studies

- **Business Coaching** (2013 – 2014) Basic business workflow and management training through TÁMOP 2.3.6 grant.
- **Tripont Light Academy 1-2-3** (2011 – 2013) Comprehensive training in lighting techniques, various photography disciplines, and project management.
- **SZTE JGYPK, Web Programmer Certificate** (2010 – 2011, *Incomplete*) Gained foundational skills in web development, including HTML, Java, SQL, and graphic design. Lost interest and shifted to photography and entrepreneurship.
- **SZTE TTIK, Computer Engineering BSc.** (2008 – 2010, *Incomplete*) Attended courses in programming (C, Assembly), computer architecture, discrete mathematics, and algorithms. Did not complete the degree, switched career focus.

# Skills and competencies

## Technical Skills

### Programming Languages

- **Experienced:** C#, Python
- **Proficient:** C++, HTML, CSS, SQL, PHP
- **Familiar:** Java, JavaScript, TypeScript, C, Google Script, assembly

### Frameworks and Technologies

- **Web Development Frameworks:**
  - **Experienced:** .NET Core, Blazor, Razor, MAUI, MudBlazor
  - **Proficient:** Angular
  - **Familiar:** Flask
- **Machine Learning Frameworks and Tools:**
  - **Familiar:** FastAI, PyTorch, TensorFlow, Scikit, Jupyter Notebooks, Paperspace Gradient
- **DevOps and Containerization:**
  - **Experienced:** Azure DevOps
  - **Proficient:** CI/CD pipeline implementation
  - **Familiar:** Docker, Docker Compose
- **Data Analysis and Visualization:**
  - **Familiar:** Pandas, NumPy, Matplotlib, Seaborn

### Databases and Data Management

- **Proficient:** MongoDB, SQL databases (e.g., MySQL, SQL Server)
- **Familiar:** ElasticSearch

### Cloud Services and DevOps

- **Experienced:** Azure DevOps, Portal, Storage, App services and VMs
- **Proficient:** Azure Resource Management, CI/CD pipeline implementation
- **Familiar:** Docker, Docker Compose, Azure Media Services

### Software and Tools

- **Version Control:**
  - **Experienced:** with Git (Azure DevOps, GitHub)
  - **Familiar:** with SVN
- **3D Graphics and Modeling:**
  - **Experienced:** Blender 3D, Unreal Engine 4, Unity 3D
  - **Proficient:** Substance Painter, Substance Designer, SketchUp, V-Ray
  - **Familiar:** Houdini, SolidWorks CAD, ArchiCAD, CATIA, Fusion 360
- **Adobe Creative Suite:**
  - Experienced with Adobe Photoshop and Adobe Lightroom

### Creative Design and Game Development

- 2D/3D asset creation, vector graphics, modeling, texturing, lighting, and rendering
- UI/UX design for web and applications
- Visual storytelling and game design
- VFX, shaders, and procedural/parametric modeling
- Experience with game development and engine customization in Unity 3D and Unreal Engine 4
- Animation and physics simulation

## Professional Skills:

- **Project Management:** Experience managing projects from conception to completion, including software development, marketing campaigns, and creative projects. Familiar with Agile methodologies and Azure DevOps for CI/CD pipeline management.
- **Business and Negotiation:** Experience in business negotiation, client management, and corporate administration. Skilled in developing and executing strategic business plans.
- **Creative and Design Skills:** Strong background in creative design, including 2D/3D asset creation, UI/UX design, and visual storytelling for gaming and simulation. Experienced in VFX, shaders, and procedural/parametric modeling.

## Soft Skills:

- **Leadership:** Experience in managing smaller cross-functional teams in mostly startup environments. Capable of mediating conflicts and fostering a collaborative workplace.
- **Communication:** Fluent in English (C2) and beginner in German (A1). Skilled in clear and effective communication with both technical and non-technical stakeholders.
- **Problem-Solving and Adaptability:** Strong analytical skills with a demonstrated ability to solve complex problems and adapt to new challenges. Comfortable learning new technologies and tools independently.

## Interests

### Creation

Creating and altering things has grown to be a fundamental part of my life. Whether it's a piece of software, a 3D model, furniture, or a photo, I have enjoyed the process of creation and the satisfaction of seeing the results of my work since early childhood.

### Creativity and Design

A strong passion for creativity, from legos to VR to simulation and design, this passion fuels my interest in software development and design.

### Mechanics and Electronics

What started out as hobby R/C models has kept up with me throughout my life, as I have built (and repaired) various electronic devices. This hands-on experience of taking things apart, understanding how they work, and putting them back together enhances my understanding of hardware-software integration.

### Technology and Futurism

I am deeply interested in emerging technologies and their potential impacts on society, such as AI, quantum computing, and space exploration. This forward-thinking mindset gives me perspective when I approach my software development and data science endeavours.

### Nature, Elements, Exploration

Since as long as I can remember, I have always enjoyed water and am a certified scuba diver. For most of my adult life, I have been a rock climber and outdoor enthusiast. Lately I picked up paragliding, adding an additional element to my interests. In my life, I seem to gravitate towards activities that reward me with a sense of exploration and connection to the natural world, while demanding personal responsibility and self-reliance.