

TOMASZ MICHNO, PHD



CONTACT & INFO

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SKILLS

Programming/scripting languages

Python ●●●●●●●●●●
C ●●●●●●●●●●
C++ ●●●●●●●●●●
C++17/20 ●●●●●●●●●●
C# ●●●●●●●●●●
C++/CLI ●●●●●●●●●●
OpenCL, CUDA ●●●●●●●●●●
SQL ●●●●●●●●●●
No-SQL ●●●●●●●●●●
XML ●●●●●●●●●●
Matlab ●●●●●●●●●●

Frameworks and libraries

OpenCV, EmguCV ●●●●●●●●●●
Intel IPP ●●●●●●●●●●
Keras ●●●●●●●●●●
Tensorflow ●●●●●●●●●●
GluonCV ●●●●●●●●●●
Boost ●●●●●●●●●●
LittleCMS ●●●●●●●●●●
WxWidgets ●●●●●●●●●●
QT ●●●●●●●●●●
Pleora SDK, Sopera SDK ●●●●●●●●●●

Operating Systems & Containers

Linux ●●●●●●●●●●
Windows ●●●●●●●●●●
Docker ●●●●●●●●●●

Technologies, methodologies, tools

Computer Vision Image Processing
Machine Learning Design Patterns
Graphs CBIR databases
GPGU CI/CD Unit Tests
TDD Agile SCRUM git tfs
Visual Studio + Code cmake
LaTeX Doxygen Jira Confluence
Gitlab/Github Json Protobuf
cameras and hardware GigE

ABOUT ME

I have a strong background in both software development and science, specializing in image processing, deep learning, and machine learning. My primary programming languages are C++, C, and Python, in conjunction with OpenCV and Intel IPP libraries. I manage projects, design robust software architectures, formulate and implement efficient algorithms, conduct research, and connect the science with the industry.

WORK HISTORY/EXPERIENCE

📅 04/2022 - now

📍 Austrian Institute of Technology
Vienna

research engineer (with scientific tasks)

Main activities and responsibilities:

I am a key member of a team specializing in high-performance vision systems, providing applied science solutions for industry and funded projects. My work involves integrating cameras, stages, and lights to conduct research/science and develop applications. I have contributed to computer vision projects both as a scientist and software developer for industry partners (e.g. voestalpine BÖHLER) and funded projects like e.g. FitAM (Metal Additive Manufacturing), metaFacturing (EU Horizon project for Welding and Casting use cases). I take part in meetings with clients and in consortium meetings for funded researches. I am project lead for the AIT tasks in metaFacturing.

Skills and tools developed:

using modern C++ (C++11 and 17), Python, image processing algorithms, machine learning, using OpenCV library for image processing, unit tests, design patterns, both on site and remote work, Continuous integration (CI) and Continuous Delivery (CD), development of python packages, using Git and Gitlab, Agile & SCRUM Docker, project proposal writing, scientific work, research, project management.

📅 12/2021 - 06/2023

📍 Kielce University of Technology/National
Science Center, Kielce

Grant manager, main contractor, scientist, software developer

Main activities and responsibilities:

Grant manager and main contractor in the Miniatura 5 grant competition, Topic: Using Content Based Image Retrieval methods in pathology diagnosis on cardiac MRI images - initial research grant Main activities and responsibilities: Managing the results and work in the Grant, research, developing prototype software and scripts.

Skills and tools developed:

Project management, writing project proposal, using Python for research, MRI image processing, using clustering algorithms and neural networks (U-Net), administrative work for the project.

📅 09/2020 - 02/2022

📍 Canon Ophthalmic Technologies
Sp. z o.o., (a part of Canon Inc.)
Wrocław/remote

medical software developer (in R&D company)

Main activities and responsibilities:

I was a part of medical application development team for Canon Inc., focusing on ophthalmic devices like Canon OCT-HS100, OCT-A1, and OCT-S1, along with prototypes (not only for ophthalmology). My key roles included:

- Designing and implementing proprietary image processing algorithms, particularly for eye-related applications (unfortunately details confidential).
- Enhancing the deep learning service to support multiple image outputs and facilitating its integration into production systems.
- Implementing image registration algorithms for precise image alignment.
- Creating project templates for efficient C++ and C# integration (with C++/CLI), alongside Python and OpenCV for prototype development.

My work involved close collaboration with cross-functional teams, including testers, researchers, and Japanese coordinators.

Skills and tools developed:

using modern C++ (C++11 and 17), C# and connecting them using C++/CLI, image processing algorithms, transferring learned deep learning models into production applications, write prototype applications and tools using Python, using Intel IPP and OpenCV libraries for image processing, unit tests, design patterns, remote work, Continuous integration (CI) and Continuous Delivery (CD), basic development of nuget packages, development of Visual Studio templates, using TFS and Git, Redmine, biological knowledge about structures of the eye and retinal pathological changes.

📅 09/2020 - 12/2021

📍 **Grant for: National Center for Research scientist, software developer, and Development, architecture lead**

consortium: Kielce University of Technology and Altar Sp. z o.o., Kielce

Main activities and responsibilities:

I served as a Data Processing Specialist within the EMOTICA AI - Intelligent Contact Center System project, Milestone 2. My primary responsibilities included:

- Designing a robust system architecture for multi-class text message classification, architecture lead for the team of scientist and developers.
- Researching and implementing various vectorization methods (e.g., One-hot, Count, TF/IDF) and machine learning algorithms (e.g., CNN, RNN, fuzzy logic) for classification tasks, backed by comprehensive Unit Tests.
- Developing a scalable server utilizing Celery to handle concurrent training, retraining, and classification requests, with communication managed through RabbitMQ.
- Providing training sessions on git and Doxygen to enhance team proficiency. Achieving the successful delivery of a production-ready multi-class message classification server.
- Contributing to an ongoing paper currently under review and generating comprehensive documentation.

Skills and tools developed:

Python, machine learning, text information classification, NLP, design patterns, RabbitMQ, servers, Unit Tests, Doxygen, Git, Jira, Agile & SCRUM.

📅 2018 - now

📍 remote

reviewer

Preparing peer reviews for the well recognized international journals (e.g. IEEE Access, IEEE Sensors)

📅 09/2014 - 09/2020

📍 **dmt Software House Sp. z o.o.**, Kraków/remote

software developer

Main activities and responsibilities:

I developed payment terminal applications at the beginning of the work for dmt. Next as a part of a team, I developed many high performance servers using C++ and C# for different purposes like for example benefit/sports cards (for Benefit Systems), fleet cards, prepaids and payments. I also prepared WebAPI servers with Swagger. Additionally I prepared many advanced scripts for business reports using T-SQL for one of the prepaid company. During my work I was also a support for frontend/GUI team and prepared users interfaces with Angular. I also performed training about Doxygen for the rest of my team. During my work I had a very strong cooperation with the testing team and company clients.

Skills and tools developed:

embedded C for Verifone terminals, C++ and C#, Angular, T-SQL, preparing high-performance servers, preparing advanced SQL scripts, WebAPI, Rest, Swagger Angular, Jira, Confluence, remote work, svn, git, Agile, Continuous integration (CI) and Continuous Delivery (CD).

📅 2012 - 2020

📍 **freelance**, remote

freelance software developer

Main activities and responsibilities:

As a freelance software developer, I created different projects for clients, including website development, desktop applications, server solutions, and computer vision projects. The most interesting were:

- Creating web applications and servers to facilitate local currency transactions in Kielce.
- Providing custom templates for WordPress to meet specific client needs. Designing an application for speech therapists that leverages Computer Vision technology to assist in working with children.
- Developing a Linux-based application for image and photo printing, utilizing C++ (more details: <http://linuxprinting.sourceforge.net>). **Skills and tools developed:** PHP, C#, C++, Python, Django, OpenCV/EmguCV, face detection, servers, websites, custom Wordpress templates.

📅 10/2011 - 09/2022

📍 Kielce University of Technology, Kielce

Adiunkt (lecturer), scientist

Preparing authorship program and providing lectures, laboratories and projects from different subjects: Modern graphics processors, Real-time 3D graphics, Computer animation, Physics and computer animation. Laboratories and projects: Fundamentals of Computer Graphics, Computer Graphics, Advanced image processing, GPUs architecture and Programming in C.

Main research interest area: image processing, computer vision, multimedia databases.

Preparing papers for international conferences and journals, presenting researches at international conferences (regular papers).

Between September 2021 and March 2022 I was the IT tasks coordinator in the First Edition of the Platinum Index competition.

Working on Content/Sketch Based Image Retrieval - retrieving images from the multimedia database using sketches. Used technologies during research: C++, C#, Python, Django, Keras, SQL, Unit Tests, image processing, object detection. As a result different papers were published and achieved PhD

LANGUAGES

Polish (native)

English (C1)

German (A1)



OTHER SKILLS

Driving license

'B' category

Applications

Libre/Open/Microsoft Office

Gimp

Photoshop

ImageJ

Fiji

TexMaker

Soft/other skills

scientific writing

presentations

research papers

preparing lectures

data recovery

photography

macrophotography

fast learning new things

analytical thinking

project management

project proposal writing

SCIENTIFIC PAPERS

All my scientific papers are available on my Google Scholar account: <https://scholar.google.pl/citations?user=-KDZ3PAAAAAJ&hl=pl>

My ResearchGate account: /profile/Tomasz_Michno2

AWARDS

- 🏆 Team Rector's Award, 3rd degree for research papers
- 🏆 Rector's Congratulatory Letter for achieving PhD
- 🏆 Dean's Award for the best results in student surveys

INTERESTS

Photography

Entomology

Music

Literature

Computer science

Guitar

Trekking

Travelling

Mountains

SLR cameras

Programming

Citroen C4 Cactus

Animals

REPOSITORIES

Github account

Most code which I wrote in my work is properly. Recently I created an account in Github in order to share some small projects written just for fun: github.com/tmichno87

SimpleLogger

A logging library which main aim is to provide as simple as possible method to write logs to streams (e.g. console or a file), written in modern C++ (for unit test Google Test was used): github.com/tmichno87/logger







Linux printing - Krokus

This is my old engineering thesis project (from 2010), written in C++ and wxWidgets: linuxprinting.sourceforge.net/





















Other projects

I have also some other projects (e.g. focus stacking application) which code I may share with you.

EDUCATION

-  12/2020
 Warsaw University of Technology, Warsaw **Doctor of Philosophy**
Discipline: Informatyka techniczna i telekomunikacja (Technical informatics and telecommunications)
Thesis: The method of querying a multimedia database by objects identification based on approximated shapes (Metoda wyszukiwania obrazów w multimedialnych bazach danych poprzez identyfikację obiektów opisywanych za pomocą przybliżonych szkiców)
-  03/2010 - 06/2011
 Kielce University of Technology, Kielce **Master of Science**
Computer Science/Informatics
Thesis: 3D graphics rendering using Ray Tracing method and CUDA technology
-  10/2006 - 02/2010
 Kielce University of Technology, Kielce **Engineer**
Computer Science/Informatics
Thesis: Application for printing images and photos for Linux

CERTIFICATES

-  03/2022
 Wirtschaftsförderungsinstitut der Wirtschaftskammer Wien **Project Management Basics**
-  03/2022
 Udemy **Beginning Test Driven Development in C++**
Verification: UC-4126fc7d-ffd5-4a3c-8ae2-98170a572ceb
-  03/2022
 Udemy **Object Detection with Tensorflow | Fast Track Course | ML**
Verification: UC-037ce8b0-0d7e-48ae-92cc-c88ee953902e
-  03/2022
 Udemy **Practical Image Processing in C/C ++ From Ground Up**
Verification: UC-23df100f-996c-4cb5-93f4-97bbfee6d4ba
-  03/2022
 Udemy **Multi-Paradigm Programming with Modern C++**
Verification: UC-bd015586-4b7f-4845-8657-a940259629a3
-  03/2022
 Udemy **Unsupervised Machine Learning with Python**
Verification: UC-47385906-dfc7-4ab8-9ae4-09a6b9464956
-  01/2022
 Coursera **Medical Image Classification using Tensorflow**
Verification: FX48EW86BNY8
-  04/2020
 Coursera **Mathematics for Machine Learning (Specialization)**
Verification: GZBHLP92MMZ5
-  03/2020
 Coursera **AWS Computer Vision: Getting Started with GluonCV**
Verification: VNH5BHX2X3PX
-  02/2020
 Coursera **Deep Learning (Specialization)**
Verification: KQXDJ8M2F8NQ

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