Andriy Shmatukha

dr.andriy.shmatukha@gmail.com
Toronto, ON, Canada

Interventional and diagnostic MRI has always been my primary area of interest and source of inspiration. I have accumulated a significant amount of knowledge and experience in various healthcare and IT technologies, which I want to put to work. I am looking for an opportunity to apply my Artificial Intelligence / Machine Learning / Data Analysis knowledge in a meaningful, challenging and inspiring way.

I can easily relocate to Europe. My French, Dutch, Spanish and German used to be rather good. Any of them can be restored quickly.

I am used to working in the hospital environment in close collaboration with both clinicians and researchers. I am aware of safety, quality and privacy regulations pertinent to the healthcare industry. I have significant experience in developing novel MRI scanners and radiology workstations as well as delivering them to clinical sites. I have significant experience in developing my own original medical image processing algorithms and implementing them in my own original software. I am familiar with medical terminology as well as DICOM, FHIR, HL7.

I have significant industrial experience in full-stack web development, network administration, stakeholder management and customer support. With many years of web and software development experience in industrial, healthcare and customer relationships environments, I am very comfortable in many programming languages (incl. R, Python, T-SQL, C# / ASP.NET, Angular / Typescript, React / JavaScript) and am quick to learn new ones. My background in network administration enables me to handle efficiently various networking tasks including building, configuring and maintaining servers and services (incl. Azure DevOps and GitHub Actions).

I have ample experience in technical writing and presenting for various audiences – doctors, nurses, engineers, researches, corporate executives. I wrote user manuals, application guides, regulatory submissions, articles and patents.

I have ample experience in automated and manual testing of various software applications. I have significant experience in working with big multi-disciplinary teams spread over different geographical locations. I managed groups and projects.

* Experienced designer and developer of efficient reliable solutions for engineering and scientific problems
* Experienced in translating customer inputs into technical requirements and design specifications
* Leadership experience in dynamic multi-functional environments requiring organizational efficiency
* Innovator in interventional and diagnostic medical imaging (2 patents) * Image-Guided Interventions expert

> Full-Stack Web Development, React, Angular, NodeJS
> TypeScript, JavaScript, jQuery, CSS, HTML, Material Design
> REST API, Ajax, Java, Servlets, PHP, PowerShell, BASH
> ASP.NET, ADO.NET, LINQ, WCF, WPF, WinForms, C#, C++
> Entity Framework, T-SQL, MySQL, MongoDB, Mongoose
> Network Administration, TCP/IP, LAN, DNS, DHCP, DFS
> Routing, switching (Cisco), FHIR, HL7, DICOM, PACS
> Algorithm development, image analysis
> MRI scan protocols and pulse sequences

> Machine Learning, Data Analysis & Visualization
> Language Processing, NLTK, Apache Spark
> R, Python, NumPy, Pandas, SciKit-Learn, SciPy
> Seaborn, Folium, Matplotlib, GitHub Actions
> Azure DevOps, Docker, Kubernetes, Terraform
> Windows and Linux server administration, IIS, AD
> System engineering, integration, applications
> Quality assurance and regulatory affairs
> MRI-guided thermal therapies and interventions

CERTIFICATIONS

Machine Learning with Python
Data Visualization with Python
R for Data Science
Data Analysis with Python
Spark Fundamentals I
Text Analytics 101
NoSQL and DBaaS 101
Data Science 101
Big Data 101

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EDUCATION

Artificial Intelligence in Health Care – Michener Institute of Education at University Health Network | Toronto, ON
Various software / website development and data analysis courses – Seneca College of Applied Arts & Technology
Computer Networking and Technical Support – Seneca College of Applied Arts & Technology | Toronto, ON
Ph.D. Degree in Interventional Magnetic Resonance Imaging – University of Utrecht | Utrecht, The Netherlands; *thesis subject – Artefact correction in MRI thermal mapping*
M.Sc. Degree in Theoretical Nuclear Physics – Taras Shevchenko National Kyiv University | Kyiv, Ukraine; *thesis subject – Mathematical modelling and computer simulation of self-organization processes in low-temperature non-equilibrium plasma*

Professional Experience

Multi-Media Developer *Lithuanian House Toronto* *July 2025 – Present*

- ✓ Developing software and hardware infrastructure for audio and video representations
- ✓ Developing ReactTS website for customer relationships management
- ✓ Developing Java software for visual effects creation

Software Developer *7D Surgical* *January 2023 – September 2024*

- ✓ Developed C# .Net Windows Presentation Foundations software for minimally-invasive image-guided spine and brain surgeries
- ✓ Developed Azure-based ASP.NET and Angular web services for clinical data collection
- ✓ Developed PowerShell script for resource management data analysis and visualization

Full-Stack Web Developer *Upstream Works Software Ltd., Toronto* *March 2020 – October 2022*

- ✓ Developed C# (Entity Framework, ASP.NET MVC), T-SQL (MS SQL Server), TypeScript (Angular) and JavaScript / jQuery web software for a customer relationship management center
- ✓ Developed new features for existing SW, reengineered existing SW to add new functionality, investigated and repaired bugs
- ✓ Provided customer support and issue troubleshooting

Software Developer *Facial Stats AI, Toronto* *March 2020*

- ✓ Developed Python / OpenCV software for subject tracking on video sequences
- ✓ Developed C++ / Qt user interface software

Machine Learning Engineer *Seneca Polytechnic, Toronto* *October 2019 - February 2020*

- ✓ Developed Machine Learning software in Python for automated text classification

Software Developer *Ventripoint Diagnostics Ltd., Toronto, Canada* *February 2018 – June 2019*

- ✓ Debugged and improved various components of a major C#.NET product (incl. WinForms GUI)
- ✓ Designed and developed C#.NET / Java SW for data exchange between a quantitative cardiac US workstation as well as PACS / DICOM servers and various network storage entities
- ✓ Re-engineered and re-developed Java SW to enable it to function as a Windows executable instead of GlassFish website and to exchange information with .Net applications via customary designed XML files
- ✓ Developed Java SW for encryption and protection of vulnerable data entities
- ✓ Developed PowerShell script for text analysis on large depositories of ASCII files
- ✓ Administered a server farm (mainly Windows Server, also Linux and GlassFish)

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Healthcare Engineer *Sunnybrook Health Sciences Centre, Toronto, Canada* *September 2015 – January 2018*

- ✓ Developed C# .NET software for post-processing and analysis of DICOM (MRI and X-ray) images
- ✓ Developed C# ASP.NET/ADO.NET website for facilitating medical communications and diagnosis making
- ✓ Developed Python software for post-processing and analysis of DICOM (MRI) images
- ✓ Developed HTML/CSS/JS/PHP website for medical conference (full-stack)
- ✓ Created and managed cardiac MRI project: architected experimental approach, developed roadmap and budget, developed scan protocols, analyzed acquired data

Coordinator *Society For Cardiac Robotic Navigation (Americas)* *February 2017 – January 2018*

- ✓ Developed the society's website http://scrn-a.org/ (full-stack HTML/CSS/JS/PHP)
- ✓ Organized professional symposium, conducted required planning and communications

Healthcare Engineer *Sunnybrook Health Sciences Centre, Toronto, Canada* *October 2012 – September 2013*

- ✓ Developed software for post-processing and analysis of DICOM (MRI) images
- ✓ Directed development of novel methodology for MRI-based characterization of therapeutic thermal damage and monitoring of its healing process, managed associated projects
- ✓ Oversaw and supervised activities, resources and personnel
- ✓ Prepared grant applications for various funding agencies

MRI Scientist *General Electric Healthcare, Toronto, Canada* *August 2006 – September 2012*

Cardiac and Interventional Applied Sciences Laboratory at Sunnybrook Health Sciences Center – Imaging Research Center for Cardiac Interventions

- ✓ Invented novel algorithm for post-processing and analysis of real-time DCE MRI; Developed original software implementing the algorithm
- ✓ Re-engineered and re-developed C++/Qt/VTK software for cardiac surgery data acquisition, post-processing and display
- ✓ Developed algorithms, image acquisition and analysis software for MRI thermal mapping
- ✓ Developed novel algorithm and software for MRI phased array coil signal processing
- ✓ Performed verification, validation and demos of software for X-ray and MRI image fusion
- ✓ Managed project dedicated to development of hardware setup for artifact-free delivery of RF power into MRI scanner room and electrophysiology measurement signals out of it
- ✓ Pioneered study dedicated to investigation of MRI properties of thermally damaged tissues and the healing process, managed associated projects
- ✓ Created and managed projects dedicated to investigation of RF heating safety of intravascular guidewires in MRI

Ph.D. Student *Utrecht University Medical Centre, Utrecht, The Netherlands* *July 2002 – July 2006*

- ✓ Co-invented a novel algorithm for MRI thermal mapping; Developed original software implementing the algorithm
- ✓ Designed original image acquisition and post-processing algorithms for MRI guidance of minimally-invasive thermal therapies; Developed original software implementing the algorithms
- ✓ Conducted MRI-guided thermal ablation experiments involving High-Intensity Focused Ultrasound (a.k.a. Focused Ultrasound Surgery) as well as Laser, Cryo and Radio Frequency ablations

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Visiting Scientist *National Research Council of Canada, Winnipeg* *February 2002 – July 2002*
Institute for Biodiagnostics

- ✓ Developed MR image post-processing software for quantitative T1 and T2 mapping

Senior MRI Applications Engineer *General Electric Medical Systems, Haifa, Israel* *February 2000 – February 2002*

- ✓ Contributed to development of clinical MRI scanners and radiology work stations; Coordinated and facilitated R&D efforts on development and system-level integration of various new hardware and software components
- ✓ Performed safety and system performance tests required for regulatory submissions; Performed verification, validation and quality assurance testing
- ✓ Developed test plans and reports, user manuals and application guides; Diagnosed and resolved prototype and product performance issues
- ✓ Supported users at both clinical use and prototype evaluation sites (remote and on-site); Collected, systematized and interpreted customer feedback
- ✓ Trained users on newly developed hardware and software components; Developed clinical MR image acquisition protocols