

Naum (Mike) Papanicolau, Ph.D.

Pickering, Ontario L1V 5S2

Education

PhD, Computer Science - 2018
Ryerson University - Toronto, Ontario

MSc, Computer and Electrical Engineering - 2009
Ryerson University / Sunnybrook Research Institute - Toronto, Ontario

BSc, Computer Science - 2006
Ryerson University - Toronto, Ontario

Patents

Canadian Patent No. 2998399

U.S. Patent No. 10,564,271

Title: SYSTEMS, METHODS AND DEVICES FOR HIGHLY-PARALLELIZED QUS-VALUE DETERMINATION FOR CHARACTERIZING A SPECIMEN.

Abstract: A quantitative ultrasound (QUS) system for characterizing a specimen, the system comprising an ultrasound transducer operable to transmit ultrasound signals into the specimen along multiple adjacent scan lines extending axially within the specimen, and collect returned ultrasound signals therefrom and generate RF signals based on said returned ultrasound signals, wherein said RF signals are associated with respective ones of said scan lines to represent a characteristic of the specimen at each of multiple locations within the specimen along each of said scan lines; and a parallelizable processing unit communicatively coupled to said ultrasound transducer and operable to concurrently compute from said RF signals respective QUS values representative of said characteristic for each of a plurality of said multiple locations in parallel, wherein successive parallel outputs of said respective QUS values are characteristic of the specimen along each of said multiple scan lines.

Professional Summary

- ✓ Over a decade of experience performing pre-clinical and clinical studies in a biophysics laboratory.
- ✓ Over 15 years I developed 10 unique software platforms for quantitative ultrasound analysis of ultrasound radiofrequency and spectral data.
- ✓ Extensive track record building pre-clinical and commercial **medical device** development within ultrasound and ophthalmic imaging domains.
- ✓ Effective communicator, able to articulate ideas concisely and comprehensively.
- ✓ Led complex enterprise level projects for **Bombardier Aerospace's** maintenance program and planning division.
- ✓ Managed the ground up development of a medical device manufacturing risk and safety **Quality Management System (QMS)**, developed in compliance with, and frequently audited by, international regulatory bodies (FDA/GDPR/HIPAA/ISO13485/ISO62304/ISO14971).
- ✓ High degree of familiarity with IT technologies and system development methodologies.

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Professional Experience

Independent Consultant Toronto, Ontario

October 2023 - Present

Providing technical consultation services to medical professionals and legal practitioners in various technological disciplines, including quantitative ultrasound analysis of ultrasound radiofrequency and spectral data.

Software Development Manager Cellview Imaging - Toronto, Ontario

March 2018 - October 2023

As leader of the software team reporting directly to the CEO, I facilitated the ground up development of organizational wide IT applications. During my time, Cellview grew from a small research-based startup, into a fast paced and rapidly expanding medical device manufacturer. Joining the team in its infancy to oversee product software development, my position grew to include the management of all organizational IT initiatives including *research and development, team building, internal and customer facing application and infrastructure development, budgeting and cost forecasting, IT regulatory compliance and auditing, cyber-security management, data strategy and governance including patient health record management.*

- **Technical Lead:** Was software lead in the development of the proof of principal device (WR1- Ultra-Widefield Retinal Imager) using Rapid Prototyping methodologies and remained the principal technical lead for device data processing algorithms, low-level command and control modules and firmware integration.
- **Application Development:** Established and actioned an application development strategy aligning Cellview's rapid growth targets with development milestones. Application domains include medical device development and remote accessibility, customer facing infrastructure for secure remote data review and report generation, medical record management and health institution integration, as well as long term product development considerations such as machine learning and organizational performance metrics.
- **Team Building:** My focus was on the onboarding and cultivation of highly skilled cross functional team members in areas of research, application development, quality assurance and administrative roles.
- **Regulatory Compliance:** Managed the implementation and ongoing adherence of Cellview's IT related regulatory compliance including QMS processes, SOPs, HIPAA and GDPR compliance, patient health record management and cybersecurity.

Founder Evrika Research Technologies - Toronto, Ontario

September 2015 - June 2018

At Evrika, we led the development of the world's first real-time quantitative ultrasound (QUS) point-of-care clinical devices for non-invasive cancer treatment monitoring. This advancement stemmed from our patented GPU Accelerated Spectral Processing (GASP) technology, which allows for spectral analysis of ultrasound radiofrequency data for tissue characterization at speeds significantly exceeding conventional methods.

- **Technical Lead:** My extensive work in QUS-based studies and the development of analytical software has given me a deep understanding of the processing methods and requirements of ultrasound tissue characterization applications. This experience provided the essential groundwork for conceiving and developing the patented GASP methods, which in turn enabled the creation of real-time ultrasound tissue characterization devices.
- **Application Development:** Application development included creation of the worlds first point of care, QUS based tissue characterization devices used in ongoing clinical and pre-clinical research. Additional development included clinical trial data analysis, data summarization and report generation tools connected to a centralized SRI data repository.
- **Team Building:** As founder, I built a highly skilled cross-functional team and directed it in the development of cutting-edge ultrasound-based technologies.
- **Project Management:** Managed the development of the worlds first real-time QUS data processing systems. Agile methodologies were employed to develop multiple unique devices. This was contracted by Sunnybrook Research Institute for use in experimental and clinical trial research.

Head of Product Development I&D Consulting Services - Toronto, Ontario

May 2012 - November 2015

I was project lead in the ground up development of an enterprise system contracted by **Bombardier Inc.** In this capacity, I spear-headed the development of multi-departmental Enterprise Labour Hour Cost Model (**ELHCM**) resource planning and reporting systems, for the maintenance and planning division of **Bombardier Aerospace.**

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- **Technical Lead:** Implemented the core computational engine which performs discrete event simulations of aircraft maintenance lifecycles. These data processing modules lay the foundation of the ELHCM system.
- **Data Strategy:** Working with client stakeholders to identify long term data requirements and implement a plan for centralized storage, provisioning and governance.
- **Team Building:** Built and guided a diverse team of engineers throughout the project cycle using Agile development methodologies.
- **Project Management:** Project lead and primary point of contact between I&D and Bombardier management. Worked closely with stake holders to ensure multi-departmental client project satisfaction.

Senior Technical Analyst - Operations Control Center Indigo Books and Music Inc. - Toronto, Ontario

May 2009 - August 2015

As a technical analyst and team lead, I was responsible for the maintenance and oversight of the organization wide infrastructure and daily operations.

- Oversight of company wide IT infrastructure and computational workload.
- Management of all high severity incidents relating to computing and network infrastructure, data processing systems and supply chain disruptions.
- Team management, scheduling and guidance.
- Authored high severity technical communications and incident reports for senior leadership.

Research Assistant Sunnybrook Research Institute - Toronto, Ontario

August 2006 - February 2012

As a graduate student and research assistant, I worked on spectral computational models of conventional frequency ultrasound to detect induced cell death from cancer treatment.

- Design and execution of pre-clinical experimentation in a variety of In Vitro and In Vivo models
- Oversight of phase I clinical trial including initiation, recruitment, ultrasound data collection, application and data processing, design and implementation.
- Conducted research in a variety of ultrasound analytical methods and algorithm design.
- Resulted in 4 software related invention disclosures.