Mahmoud Ramze Rezaee

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An accomplished subject matter expert in imaging industry and expert in Machine Learning techniques. With more than 25 years' experience, have held various technical and leadership positions in software development and have convened numerous cross-sector partnerships between internal business teams and between industry and academia.

Holds a PhD in computer science and have published in leading academic journals and presented at numerous international scientific conferences, author of 14 US patents. Have led numerous teams consisting of scientists and developers.

Work Experience

INTEL VISION TECHNOLOGIES

CIO – AUG 2022 – CURRENT

- Chief Innovation Officer: Developing Machine Learning Algorithms for vision-controlled manipulation of robotic arm in underwater welding

AI CONSULTANT| 2019 – CURRENT

- AI/Machine Learning Consultant
- EnvisioningLabs Consultant

CHANGE HEALTHCARE | 2017 – 2019

SENIOR RESEARCHER AND DATA SCIENTIST | 2018– 2019

- Created data anonymization applications for million records (medical images and radiology reports)
- Worked on the development of models to automatically detect body parts in MR images using TensorFlow and medical image distribution on Google Cloud Platform (GCP)
- Development was in Agile/Scrum/Kanban-style development processes

SENIOR RESEARCHER | 2017 – 2018

- Managed research into the use of Machine Learning/Artificial Intelligence in Picture Archive and Communication Systems (PACS)
- Prototyped a tool for indexing and analyzing radiology reports (15+ million reports) including automated classification of the reports.

MCKESSON | 1999 – 2017

SENIOR RESEARCH AND IMAGE PROCESSING SME | 2010 – 2017

- Served as the image processing subject matter expert for inquiries regarding image processing techniques/features with PACS viewer to define the software roadmap.
- Conducted customer visits to assess escalated image quality issues and define future software features.
- Researched new technology trends and prototyped new concepts

- Managed 6 collaborated research projects with Simon Fraser University and University of British Columbia (NSERC engaged programs) including staff and research scientists
- Worked on design and delivery of an innovation program at Imaging and Workflow Solutions of McKesson

SENIOR MANAGER | 2007 – 2010

- Managed software development of a new image processing library for PACS image viewer (800K+ line of C++ source code), the team included among others, researchers with PhDs. The library was used by internal software development team to create product features.
- Hiring, mentoring, career development, and performance management of the team
- Served as the subject matter expert for obtaining FDA approval for PACS Mammography viewing
- Fostered cross department programs among support/services/sales/product management and software quality teams
- Trained staff of the tier 3 development support on understanding/troubleshooting medical image quality issues

PROJECT MANAGER | 2003 – 2007

- Managed development and maintenance of 2D/3D image processing library
- Worked directly with product management, sales, executives, and other stakeholders
- Hiring, career development, and performance management of the team

TEAM LEAD | MCKESSON | 2001 – 2003

- Released a 3D visualization tool integrated in a PACS viewer (first on the market)
- Led the initial design of ALI Image processing library

SENIOR SOFTWARE DEVELOPER | MCKESSON | 1999 – 2001

- Software development work on ALI DIOCM library

PROJECT LEAD | LKEB (LEIDEN, THE NETHERLANDS) | 1998 – 1999

- Led knowledge guided image processing development in https://www.lumc.nl/org/radiologie/research/LKEB/
- Secured 2 grants totaling ~ $500K for 2 image processing projects

Achievements

MCKESSON DISTINGUISHED TECHNOLOGIST

- Distinguished Technologist of 2016-2017 in recognition for sustained and extraordinary technical achievement in pursuit of excellence and innovation
- McKesson has over 80,000 employee and being recognized as one of the distinguished technologists is an extraordinary achievement

US PATENTS

1. Image processing system and method for detecting an anatomical marker within an image study (patent number: #10078726)
2. Method and apparatus for detecting anatomical elements (#9940545)
3. Method and computing device for window leveling based upon a gaze location(#9933849)

4. Method and computing device for identifying a pixel visibility loss condition (Patent number #9858892)
5. Method and apparatus for enhancing medical images (#9646366)
6. Apparatus, method and computer-readable storage medium for transforming digital images (#9626476)
7. PACS viewer and a method for identifying patient orientation (#9454814)
8. Methods, apparatuses, and computer program products for identifying a region of interest within a mammogram image, (#9058650)
9. Apparatus, method and computer-readable storage medium for compensating for image-quality discrepancies, (#8896619)
10. Methods, apparatuses, and computer program products for determining a modulation transfer function of an imaging system (#8837837)
11. Methods, apparatuses, and computer program products for identifying a region of interest within a mammogram image(#8781187)
12. Methods, apparatuses, and computer program products for controlling luminance of non-tissue objects within an image (#8401285)
13. Method and apparatus for enhancing medical images (#9,646,366)
14. Database System and Method for Identifying a Subset of Related Reports (US 2018/0285438 A1)

PUBLICATIONS

1. **Evaluation of three image denoising algorithms for reducing radiation dose in CT**, Mahmoud Ramze Rezaee, Yonas T. Weldeselassie, M. Stella Atkin, International Journal of Computer Assisted Radiology and Surgery/Springer, 2012
2. **Reduction of image quality discrepancy in PACS**, Mahmoud Ramze Rezaee, International Journal of Computer Assisted Radiology and Surgery/Springer, 2011
3. **Visualization methods for computed radiography images,** Mahmoud Ramze Rezaee, Cristian Bonciu, Warren Edwards, Journal of Digital Imaging, pp 1-10, 2005
4. **A multi-resolution image segmentation technique based on pyramidal segmentation and fuzzy clustering,** Mahmoud Ramze Rezaee, P.M.J. van der Zwet, R.J. van der Geest, J.H.C. Reiber, IEEE Trans. Image Processing, 9(7), pp 1238-1249; Cited by 240
5. **Segmentation of MR images by pyramidal segmentation and fuzzy clustering**, Mahmoud Ramze Rezaee, P.M.J. van der Zwet, R.J. R.J. van der Geest, , B.P.F. Lelieveldt, WAC, 2000
6. **Fuzzy feature selection**, Mahmoud Ramze Rezaee, B. Goedhart, B.P.F. Lelieveldt, J.H.C. Reiber, Pattern Recognition, 1999; Cited by 68
7. **A new cluster validity index for the fuzzy c-means**, Mahmoud Ramze Rezaee, B.P.F. Lelieveldt, J.H.C. Reiber, Pattern Recognition Letters, vol. 19, pp. 237-246; 1998, Cited by 510
8. **Application of fuzzy techniques in image segmentation**, Mahmoud Ramze Rezaee, ISBN: 90-9011580-3, 1998
9. **Automatic detection of left ventricle in short-axis MR images**, Mahmoud Ramze Rezaee, P.M.J van der Zwet, R.J. van der Geest, J.H.C. Reiber, International Symposium on Cardiovascular Imaging, 1998
10. **A model for the modulation transfer function of cardiovascular x-ray system,** Mahmoud Ramze Rezaee, P.M.J. van der Zwet, J.J. Gerbrands, J.H.C. Reiber, Investigative Radiology, vol. 31(3), pp. 161-172, 1996
11. **Segmentation of MR images by the fuzzy c-means algorithm**, Mahmoud Ramze Rezaee, C. Nyqvist, P.M.J. van der Zwet, E. Jansen, J.H.C. Reiber, Computers in Cardiology, pp. 21-24, 1995
12. **Quantitative Cardiovascular Image Analysis: Current Status and what are Realistic Expectations for the Future?,** Johan H. C. Reiber, Bob Goedhart, Hans G. Bosch, Rob J. van der Geest, Jouke Dijkstra, Gerhard Koning, Mahmoud Ramze Rezaee, Boudewijn P. F. Lelieveldt, Albert de Roos, Ernst E. van der Wall, Albert V. G. Bruschke, Vascular Medicine, pp 103-131., 1997, Kluwer Academic Publisher

COURSES

Project Management & Leadership

- Practical Project Skill (Philip G. Beynon & Associates Inc.)
- A Guide to the Project Management Body of Knowledge (Project Management Institute)
- Getting Things Done (Philip G. Beynon & Associates Inc.)
- Project Management for Project Success (Software Productivity Center Inc.)
- In search of Excellent Requirements (Software Productivity Center Inc.)
- Mastering Agile Methods and Techniques, Quadrus®
- Leadership Development Program (SAGE, Developmental Resources Inc.)
- Situational Leadership II (McKesson)

Process

- Overview of the Capability Maturity Model (McKesson)
- Risk Management, ISO 14971 & FDA requirements, (www.fdaconsulting.com)

Technical

- Core Concepts in Data Analysis (Higher School of Economics, Coursea)
- Data Analysis and Statistical Inference (Duke University , Coursea)
- R Programming (Johns Hopkins Bloomberg School of Public Health, Coursera)
- Image Quality Clinic (OTech Inc.)
- Understanding Radiological Image Quality, A Linear System Approach (SPIE)
- Enterprise Architecture Workshop (Integrate IT LLC)
- Object Orient Development Training (RUP)
- Applying UML and Patterns
- Advance Technology Training (object-oriented analysis and design with UML and Patterns, ValTech Inc.)
- Radiation Dose in CT

Technical Knowledge and Protocols

DICOM, HL7, FHIR, PHI, C, C++, C#, Java, Python (OpenCV, scikit-image, NumPy, SciPy, Matplotlib, PIL and Pillow, DICOM, scikit-learn,…), TensorFlow, Keras, CUDA, SQL, Git, Data Indexing, Image Segmentation, Clustering & Visualization, NLP, ML, Deep Learning, GCP

Languages

English, Dutch and Farsi

Education

PhD, Radiology/Computer Science, Leiden University, The Netherlands

Thesis: Application of Fuzzy Techniques in Image Segmentation

MSc, Electrical Engineering, Delft University of Technology, Delft, The Netherlands

Thesis: A Model for the Modulation Transfer Function of a Cardiovascular X-ray System

Community Service

Square Peg Society, Board of Directors, 2016- Present