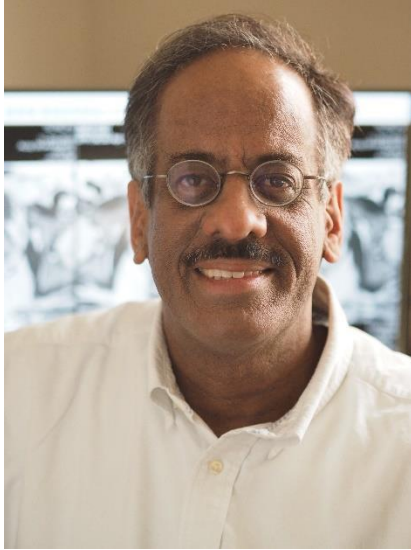


Dr. Masoom Haider



At a Glance

- Head of the AI, Radiomics and Oncologic Imaging Research Lab at Mount Sinai Hospital
- Staff Radiologist, Mount Sinai Hospital, Senior Clinician Scientist, LTRI and Professor, Joint Department of Medical Imaging, University Health Network, University of Toronto
- Expert in oncologic imaging with a research focus in abdominal and pelvic MRI and therapeutic response assessment using quantitative imaging and machine learning (AI/radiomics)

Major Research Activities

Currently our team is using machine learning and artificial intelligence methods combined with quantitative imaging biomarkers derived from radiomics to develop predictive and prognostic signatures from MRI and CT in prostate and pancreatic cancer. In prostate cancer, automated segmentation of the prostate and cancer sites on multiparametric MRI is being developed to aid in treatment planning and reproducible interpretation for precision medicine. In pancreatic cancer, a better understanding of radiologic pathologic correlates for non invasive assessment of the tumor microenvironment are being studied. A computational image analysis pipeline that incorporates the expertise of radiologists, pathologists and oncologists around medical imaging forms the core of the lab.

Biosketch

Dr. Masoom Haider's is a radiologist and a clinician scientist at the University of Toronto in the Joint Dept of Medical Imaging. He has a research focus is in imaging biomarker validation using multiparametric MRI and CT. His interest is in data mining of image features (also called "radiomics") for development of stable transplantable imaging signatures for prognostication and prediction in abdominal and pelvic malignancy. A variety of statistical and machine learning (Artificial Intelligence) approaches are applied to achieve these goals.

He received his MD from the University of Ottawa and undertook additional medical training at the University of Toronto and the Cleveland Clinic Foundation and computer science education at the University of Waterloo

Tumour sites of where there is ongoing research are prostate, pancreas, kidney and liver. Dr. Haider has held peer-reviewed grants from Prostate Cancer Canada, the Canadian Cancer Society Research Institute, Cancer Care Ontario and the Ontario Institute for Cancer Research for MRI-related prostate and pancreatic cancer research. He is the imaging lead on national prospective MRI trials in prostate cancer and has worked on establishing guidelines for the use of multiparametric prostate MRI (mpMRI) for prostate cancer including the Pi-Rads standard for performance and interpretation of prostate mpMRI. He holds a Chair in Artificial Intelligence, Imaging Biomarkers and Radiomics at the Lunenfeld-Tanenbaum Research Institute, Sinai Health System. In the Joint Dept of Medical Imaging and Lunenfeld-Tanenbaum Research Institute he leads the AI, Radiomics and Oncologic Imaging Research Lab and collaborates with oncologists, computer scientists, engineers, radiologists and biomedical physicists.

Current Affiliations

- Clinician Scientist II, OICR
- Professor of Radiology, University of Toronto, Faculty of Medicine, Department of Medical Imaging, Toronto, Canada
- Director, Sinai Health System Research MRI, Toronto, Canada
- Head, AI, Radiomics and Oncologic Imaging Research Lab, Lunenfeld-Tanenbaum Research Institute, Sinai Health System, Toronto, Canada
- Cross-appointed Senior Scientist, Sunnybrook Research Institute, Toronto, Canada
- Cross-appointment- Institute of Biomaterials and Biomedical Engineering (IBBME) University of Toronto
- Associate Appointment, Institute of Medical Sciences (IMS), University of Toronto

Research interests:

- Magnetic resonance imaging (MRI)
- Computed tomography (CT)
- Artificial Intelligence
- Machine learning
- Radiomics
- Quantitative imaging biomarkers
- Prostate cancer
- Pancreatic cancer
- Renal cell carcinoma
- Liver metastases
- Hepatocellular carcinoma
- Theranostics
- Imaging for therapy response assessment

- Computer aided diagnosis (CAD)

Select Recent Peer-Reviewed Publications as of 2019

Total: 194 Citations:13813 h-index:61 i10-index:177

1. Klotz L, Pond G, Loblaw A, Sugar L, Moussa M, Berman D, Van der Kwast T, Vesprini D, Milot L, Kebabdjian M, Fleshner N, Ghai S, Chin J, Haider M. Randomized Study of Systematic Biopsy Versus Magnetic Resonance Imaging and Targeted and Systematic Biopsy in Men on Active Surveillance (ASIST): 2-year Postbiopsy Follow-up. *Eur Urol.* 2019 Nov 7. pii: S0302-2838(19)30773-0. doi10.1016/j.eururo.2019.10.007. PubMed PMID: 31708295
2. Khalvati F, Zhang Y, Baig S, Lobo-Mueller EM, Karanicolas P, Gallinger S, Haider MA. Prognostic Value of CT Radiomic Features in Resectable Pancreatic Ductal Adenocarcinoma. *Sci Rep.* 2019 Apr 1;9(1):5449.
3. Turkbey B, Rosenkrantz AB, Haider MA, Padhani AR, Villeirs G, Macura KJ, Tempany CM, Choyke PL, Cornud F, Margolis DJ, Thoeny HC, Verma S, Barentsz J, Weinreb JC. Prostate Imaging Reporting and Data System Version 2.1: 2019 Update of Prostate Imaging Reporting and Data System Version 2. *Eur Urol.* 2019 Mar 18. pii: S0302-2838(19)30180-0.
4. Khalvati F, Zhang J, Chung AG, Shafiee MJ, Wong A, Haider MA. MPCaD: A multi-scale radiomics-driven framework for automated prostate cancer localization and detection. *BMC Med Imaging.* 2018 May 16;18(1):16
5. Haider MA, Vosough A, Khalvati F, Kiss A, Ganeshan B, Bjarnason GA. CT texture analysis: a potential tool for prediction of survival in patients with metastatic clear cell carcinoma treated with sunitinib. *Cancer Imaging.* 2017 Jan 23;17(1):4

Previous experience and education

- Chief, Department of Medical Imaging, Sunnybrook Health Sciences Centre
- Head of MRI, Department of Medical Imaging, Sunnybrook Health Sciences Centre
- Head of Abdominal and Pelvic MRI, Princess Margaret Hospital and the University Health Network

Opportunities to collaborate

Quantitative imaging of cancer (outside of the brain)

- Imaging of prostate cancer (renal cell carcinoma, pancreatic cancer, hepatocellular carcinoma, liver metastases)
- Machine learning as applied to diagnostic imaging in cancer
- Technology development in abdominal and pelvic MRI as applied to cancer
- Improved user interfaces for image interpretation in diagnostic imaging (radiology)

Related links

University of Toronto Medical Imaging – Dr. Masoom Haider

<https://medical-imaging.utoronto.ca/node/348>

Sinai Health System Research Institute Researcher Page – Dr. Masoom Haider
<http://www.lunenfeld.ca/researchers/haider>

OICR
<https://oicr.on.ca/investigators/masoom-haider/>

Lab Website
<http://haiderlab.ca/>

Contact

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