Rahul Paul

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EDUCATION

8/15 -Cont. Ph.D., Dept. of Computer Science & Engineering, University of South Florida, Tampa, USA
7/13 - 5/15 M.TECH., Dept. of Computer Science & Engineering, Indian Institute of Tech. (ISM), Dhanbad, India
8/8 - 6/12 B.TECH., Dept. of Computer Science & Engineering, West Bengal University & Technology, India

PROFESSIONAL EXPERIENCE

6/17 - Graduate Research Assistant, Dept. of Computer Science & Engineering, USF
- Working on lung nodule malignancy prediction
- Stability of deep features
- Explanations of Deep features
- Neonatal pain analysis

8/15 - 5/17 Graduate Teaching Assistant, Dept. of Computer Science & Engineering, USF

7/14 - 5/15 Graduate Assistant, Dept. of Computer Science & Engineering, IIT. (ISM), Dhanbad, India
- Worked on motion analysis from videos.

RESEARCH INTERESTS

Medical Image Analysis, Machine Learning, Data Mining, Radiomics, Computer Vision and Pattern Recognition.

PUBLICATIONS

Journal:

4. Zamzmi, G., Paul, R., Salekin, M.S., Goldgof, D., Kasturi, R., Ho, T. and Sun, Y., 2019. Convolutional neural networks for neonatal pain assessment. IEEE Transactions on Biometrics, Behavior, and Identity Science, 1(3), pp.192-200.
3. R. Paul, M. Schabath, Y. Balagurunathan, Y. Liu, Q. Li, R.Gillies, L. Hall, D.Goldgof, "Explaining Deep Features using Defined Semantic Features and Traditional Quantative Features", Tomography, 5(1), 192 (2019), doi: 10.18383j.tom.2018.00034
2. R. Paul, S. Hawkins, M. Schabath, R. Gillies, L. Hall, D. Goldgof, "Predicting Malignant Nodules by Fusing Deep Features with Classical Radiomics Features", Journal of Medical Imaging, 5(1), 011021 (2018), doi: 10.1117/1.JMI.5.1.011021
1. R. Paul, S. Hawkins, Y. Balagurunathan, M. Schabath, R. Gillies, L. Hall, D. Goldgof, "Deep Feature Transfer Learning in Combination with Traditional Features Predicts Survival among Patients with Lung Adenocarcinoma", Tomography Journal, Special QIN Issue, 2016, v.2(4), pp. 388-395, 2016, doi: 10.18383/j.tom.2016.00211

Conference:

8. R. Paul, M. M. Schabath, R. Gillies, L. Hall, D. Goldgof, "Mitigating Adversarial Attacks on Medical Image Understanding Systems", ISBI 2020 (ACCEPTED).
7. Salekin, M.S., Zamzmi, G., Paul, R., Goldgof, D., Kasturi, R., Ho, T. and Sun, Y., 2019. Harnessing the Power of Deep Learning Methods in Healthcare: Neonatal Pain Assessment from Crying Sound. arXiv preprint arXiv:1909.02543, IEEE EMB HI-POCT, 2019.
6. Zamzmi, G., Paul, R., Goldgof, D., Kasturi, R. and Sun, Y., 2019, July. Pain assessment from facial expression: Neonatal convolutional neural network (N-CNN). In 2019 International Joint Conference on Neural Networks (IJCNN) (pp. 1-7). IEEE.
5. R. Paul, D. Cherezov, M. Schabath, R. GilliesL. Hall, D. Goldgof, "Towards deep radiomics: nodule malignancy prediction using CNNs on feature images", SPIE Medical Imaging 2018, San Diego, CA, 2/2019.
4. R. Paul, L. Hall, D. Goldgof, M. Schabath, R. Gillies, "Predicting Nodule Malignancy using a CNN Ensemble Approach", The International Joint Conference on Neural Networks (IJCNN), Rio, Brazil,7/2018.
3. R. Paul, Y. Liu, Q. Li, L. Hall, D. Goldgof, Y. Balagurunathan, M. Schabath, R. Gillies, "Representation of Deep Features using Radiologist defined Semantics", The International Joint Conference on Neural Networks (IJCNN), Rio, Brazil, 7/2018.
2. R. Paul, M. Shafiq-ul-Hassan, E. Moros, R. Gillies, L. Hall, D. Goldgof, "Stability of deep features across CT scanners and field of view using a physical phantom", SPIE Medical Imaging 2018, Houston, TX, 2/2018.
1. R. Paul, S, Hawkins, L. Hall, D. Goldgof, R. Gillies, "Combining Deep Neural Network and Traditional Image Features to Improve Survival Prediction Accuracy for Lung Cancer Patients from Diagnostic CT", IEEE International Conference on Systems, Man and Cybernetics (SMC 2016), Budapest, Hungary,10/2016.

PATENTS

G. Alzamzmi, R.Paul, D. Goldgof, Y. Sun, R. Kasturi, T. Ashmeade, "Neonatal Convolutional Neural Network (N-CNN) for Pain Assessment Based on Facial Expression", US Patent No. 62/660,038, applied 04/19/2018.

PROFESSIONAL SERVICES

Journal Reviewer:

IEEE ACCESS
Medical Physics
Annals of Translational Medicine
Thoracic Cancer
IEEE Transaction of Cybernetics
Cancer Medicine
EBioMedicine
PLOS One
Journal of Electronic Imaging
Journal of Medical Imaging
Medical Image Analysis
Journal of Digital Imaging
Computers in Biology and Medicine
Journal of Experimental & Theoretical Artificial Intelligence
International Journal of Imaging Systems and Technology

Conference Reviewer:

2019 IEEE International Conference on in Data Mining (ICDM) (Primary Reviewer: Prof. L. Hall)
2018 IEEE International Conference on in Data Mining (ICDM) (Primary Reviewer: Prof. L. Hall)
2018 International Conference on Computational Intelligence in Data Mining (ICCIDM)
2017 IEEE International Conference on in Data Mining (ICDM) (Primary Reviewer: Prof. L. Hall)
2017 IEEE International Conference on Systems, Man and Cybernetics (SMC)
2017 International Conference on Computational Intelligence in Data Mining (ICCIDM)
2017 International Conference on Advanced Computing and Intelligent Engineering (ICACIE)

TEACHING

5/19 - 7/19 Graduate Instructor, Dept. of Computer Science & Engineering, USF
(Computer Organization- CDA 3103)

- Instructing the course
- Holding weekly office hours
- Organizing exams and assignments

8/15 - 5/17 Graduate Teaching Assistant, Dept. of Computer Science & Engineering, USF
(Discrete Mathematics, Operating Systems, Introduction to Programming, Object Oriented Design)

- Grading homework, programming assignments, exams
- Held weekly office hours
- Delivered lectures in the absence of the primary instructor

7/14 - 5/15 Graduate Teaching Assistant, Dept. of Computer Science & Engineering, IIT. (ISM), Dhanbad
(Computer Graphics, Operating Systems, Introduction to Computing)

- Held labs and delivered small lectures for lab's experiment.
- Grading homework, programming assignments

TECHNICAL SKILLS

Programming Languages: C; C++; Python; MATLAB; R
Deep learning: Keras, Tensorflow, MatconvNet
Packages: 3D Slicer, OpenCV, Weka, SPSS, OpenGL, ImageJ
Operating System: Windows, LINUX, Mac

AWARDS, LEADERSHIP and ACTIVITIES

- Judge at the IRONHACK 2019 (NIH/USF Bio-Hackathon)
- TEQIP Scholarship (IIT Dhanbad, India), 07/13-05/15
- Vice President and Editor of Computer Science Departmental magazine "Buffered Reader "of IIT (ISM), Dhanbad (2014-15)

OTHER PROJECTS and COMPETITIONS

- Pouring sequence prediction using RNN (https://arxiv.org/abs/1805.09393)
- Classification of cooking object's state using CNN (https://arxiv.org/abs/1805.09391)
- Kaggle Data Science Bowl – 2017 (Rank – 369 /1972)
- QIN BMMR Competition,2016 (USF Tampa – Moffitt)
- Image stitching, Traffic analysis and color detection of cars and car counting (https://github.com/hellorp1990?tab=repositories)
- Retrieve and analyze information's from text files. (https://github.com/hellorp1990/Information-retrieval)

REFERENCES

1. Prof. Dmitry Goldgof
   Department of Computer Science and Engineering
   University of South Florida, Tampa
   813-974-4055
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2. Prof. Lawrence Hall
   Department of Computer Science and Engineering
   University of South Florida, Tampa
   813-974-4195
   lohall@mail.usf.edu

3. Dr. Matthew Schabath
Department of Cancer Epidemiology
H. L. Moffitt Cancer Center, Tampa
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