Al Amin Hosain

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Research Area

• Spatio-temporal modeling in video • Deep learning based video analysis • Sequential modeling in video/text data • Sign Language recognition from visual data • Gesture modeling using body key–points and video

Research Works

- Sign Language Recognition System
  - ⋆ Proposed and developed body key-points guided feature pooling from spatio-temporal convolutional network (3d CNN) in sign videos
  - ⋆ Built different recurrent neural network (RNN) and graph neural network models for sign gesture classification from video
  - ⋆ Applied customized LSTM, GRU models for capturing spatial and temporal aspects of data
  - ⋆ Developed temporal convolutional neural network models for sentence level sign language
  - ⋆ Trained transfer learning and attention based sign gesture video recognition models
- Human Activity Recognition (HAR)
  - ⋆ Built machine learning models for HAR using state-of-the-art datasets.
  - ⋆ Applied sequential deep learning models on skeletal data for HAR
  - ⋆ Developed and analyzed multi modal perspective for HAR
- **Publication**
  - ⋆ ***Al Amin Hosain**, Panneer Selvam Santhalingam, Parth Pathak, Huzefa Rangwala and Jana Kosecka. "Hand Pose Guided 3D Pooling for Word-level Sign Language Recognition". IEEE Winter Conference on Applications of Computer Vision (WACV), 2021, Waikoloa, Hawaii (Virtual)*
  - ⋆ ***Al Amin Hosain**, Panneer Selvam Santhalingam, Parth Pathak, Huzefa Rangwala and Jana Kosecka. "FineHand: Learning Hand Shapes for American Sign Language Recognition". 15th IEEE Conference of Face and Gesture Recognition (FaGEW Workshop), 2020*
  - ⋆ ***Al Amin Hosain**, Panneer Selvam Santhalingam, Parth Pathak, Jana Kosecka and Huzefa Rangwala. "American Sign Language Recognition using Body Pose and Deep Hand-Shape Features". (IEEE DSAA, 2020 - Online)*

- ⋆ ***Al Amin Hosain**, Panneer Selvam Santhalingam, Parth Pathak, Jana Kosecka and Huzefa Rangwala. "Sign Language Recognition Analysis using Multimodal Data". IEEE DSAA, 2019 (**Best Research Paper Award**)*

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Programming Skills

Programming Languages	Python, C, C++, Java
Deep Learning Frameworks	PyTorch, Tensorflow, Keras
Machine Learning & Big Data	Scikit-Learn, Pandas, Numpy, Matlab, Hadoop, Spark etc.
Pose/Object Detection Frameworks	Openpose, Densepose, Detectron, Aphapose, Object Detection API (TF)

Professional Experience

- **Graduate Research Assistant : GMU, CS** Aug, 2015 — present
- **Samsung Research, Bangladesh** Dec, 2012 — Jul, 2015
  - ⋆ Instant Messenger (IM) development (Chat ON)
  - ⋆ Automated Test tool development for Chat ON messenger
  - ⋆ SIMD Optimization of image/signal processing routines

Education

- George Mason University — Fairfax, VA, USA
  M.S. in Computer Science (3.77/4.0) — 2015 — 2017
  Ph.D. in Computer Science (3.84/4.0, PhD Candidate, Tentative Graduation - December 2021) — 2015 — present
- Chittagong University of Engineering and Technology — Chittagong, Bangladesh
  B.S. in Computer Science and Engineering — 2008 — 2012

Relevant Courses

Pattern Recognition (A), Theory of Computation (A), MapReduce and Spark (A+), Data Mining (A), Graph Algorithm (A-), Software Testing (A-), Artificial Intelligence (A-), Machine Learning (Andrew Ng, Coursera) (99.6%)