KAUSHIK ROY

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OBJECTIVE

Highly motivated and accomplished Machine Learning researcher, eagerly seeking a challenging, research-focused position to leverage my expertise in conducting cutting-edge research and advancing the fields of Machine Learning, Deep Learning, and Computer Vision.

EDUCATION

Monash University, Australia

PhD in Electrical and Computer System Engineering   *Mar. 2020 - Sept. 2023*
Teaching Experience : Neural Networks and Deep Learning
Focus : Continual Learning, Knowledge Distillation, Federated Learning, Contrastive Learning, Kernel Method
Thesis : Lifelong Learning with Deep Neural Network

Kyung Hee University, South Korea   **CGPA: 4.013/4.30**

M.Sc in Computer Science and Engineering   *Sept. 2015 - Aug. 2017*
Thesis : Background Modeling Technique for Segmentation Problem

Institute of Information Technology, University of Dhaka, Bangladesh   **CGPA: 3.66/4.00**

Bachelor of Information Technology (*Major: Software Engineering*)   *Feb. 2009 - Dec. 2012*
SDLC, Software Development, Internship: OpenBravo POS Feature Development

PUBLICATIONS

Journal Articles

- **Kaushik Roy**, Christian Simon, Peyman Moghadam, and Mehrtash Harandi *"Subspace Distillation for Continual Learning"* **Published** in the Journal of Neural Network (**IF:** 7.8), 2023.

- **Kaushik Roy**, Jing Wu, Christian Simon, Peyman Moghadam, and Mehrtash Harandi *"Overcoming Statistical Heterogeneity in Federated Learning via Subspace Representation Distillation"* **Submitted** in Pattern Recognition Journal (**IF:** 7.2), 2023.

- **Kaushik Roy**, Christian Simon, Peyman Moghadam, and Mehrtash Harandi *"CL3: Towards Generalization of Contrastive Loss for Lifelong Learning"* **Published** in the Journal of Imaging, 2023.

- **Kaushik Roy**, Md Rifat Arefin, Farkhod Makhmudkhujaev, Oksam Chae, and Jaemyun Kim *"Background Subtraction using Dominant Directional Pattern"* **Published** in IEEE Access, vol. 6, pp. 39917-39926, June 2018.

- Gihun Song, **Kaushik Roy**, Kiok Ahn, M. Abdullah-Al-Wadud, Md. Tauhid Bin Iqbal, Oksam Chae *"A Structural Pattern-based Approach for Betacam Dropout Detection in Degraded Archived Media"* **Published** in IET Image Processing, vol. 13, no. 1, pp. 224-232, Jan. 2019.

- Md Mehedi Hasan, Tasneem Rahman, **Kaushik Roy**, Kiok Ahn, Oksam Chae *"Hawkeye: Cloud Computing Based Automated Video Error Detection in Real-Time"* **Published** in Journal of Internet Technology, vol. 18, no. 1, pp. 45-53, Jan. 2017.

Conference Papers

- **Kaushik Roy**, Peyman Moghadam, and Mehrtash Harandi *"Continual Learning using Distillation via Mixed-Curvature Space"* **Published** in MICCAI2023.

- **Kaushik Roy**, Jaemyun Kim, Md Tauhid Bin Iqbal, Farkhod Makhmudkhujaev, Byungyong Ryu, Oksam Chae *"An Adaptive Fusion Scheme of Color and Edge Features for Background Subtraction"* in IEEE International Conference on Advanced Video and Signal based Surveillance (AVSS 2017).
- Jaemyun Kim, Adin Ramirez Rivera, Byeongwoo Kim, **Kaushik Roy**, Oksam Chae *"Background Modeling using Adaptive Properties of Hybrid Features"* **Published** in IEEE International Conference on Advanced Video and Signal based Surveillance (AVSS 2017).

TECHNICAL SKILLS

Programming Language	Python, C++, Java, PHP
Deep Learning & Computer Vision Libraries	PyTorch, OpenCV, TensorFlow, LangChain
Operating System	Linux, Windows, Mac OS

PROFESSIONAL EXPERIENCE

Research Fellow @ CSIRO, Australia   **Jan. 2024 - Cont.**

- Machine Learning for Robotics

Computer Vision Engineer (R&D) @ MOPIC Co., Ltd., South Korea   **Nov. 2017 - Feb. 2020**

- Developed 3D media player for Windows platform. Employed wxWidgets and GStreamer for GUI development and video decoding respectively and rendered using OpenGL. Integrated 3D eye tracking technique for depth sensing from Intel RealSense SDK.

- Employed Encoder-Decoder architecture with skip-connection to estimate depth from single image and developed Android application for 3D reconstructed image demonstration. Studied U-net, LinkNet, and their variants.

- Prepared dataset, analyzed, augmented and trained Object (9 cards) Detection model (Single Shot Multibox Detector with MobileNet) using TensorFlow Object Detection API.

- Gained knowledge on several well-known deep learning architectures, for instances AlexNet, VGG, Inception, Mobilenet-V1, Mobilenet-V2, ResNet using Tensorflow (Keras high level API), to solve (single/multi-label) classification problem. Learned about integration of handcrafted feature (Kirsch/Sobel) with convolution layer and building custom architecture having multiple output.

Software Engineer @ Samsung R&D Institute Bangladesh (SRBD)   **Mar. 2013 - Aug. 2015**

- Developed new feature (Camera API, Drag & Drop, and Network API) for Samsung Smart TV SDK Emulator with C++. Contributed to Samsung TV App to Tizen App Conversion tool development.

- Developed and Enhanced Features of Android and IOS application for Samsung NX1, NX500 or NXmini2 camera.

- Contributed to an in-house research project entitled "Decision making through multiple object tracking and Collision Detection" by developing an object detector using Haar Cascades.

AWARDS & ACHIEVEMENTS

- Monash Graduate Scholarships (**MGS**) and Monash International Tuition Scholarships (**MITS**) for my PhD studies. **CSIRO** Postgraduate Research Scholarship.
- President Scholarship for my Master's study in Kyung Hee University, South Korea.
- About 1650 Reputation and around $300K$ people reached my solutions in stackoverflow.
- Participated and presented research work in international conferences : AVSS2017 and MICCAI2023.

REFERENCES

Available on Request.