

Curriculum Vitae

Aydin Ayanzadeh

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EDUCATION

M.Sc. in Applied Informatics

September 2020

Istanbul Technical University (ITU), Istanbul, Turkey

Thesis: "Deep Learning-Based Segmentation Pipeline for Label-Free Phase-Contrast Microscopy Images"

Co-Advisors: Behcet Ugur Toreyin (toreyin@itu.edu.tr) and Devrim Unay (devrim.unay@idu.edu.tr)

GPA: 3.75

B.Sc. in Computer Science

April 2016

University of Tabriz, Tabriz, Iran

Project: "Image edge detection using ant colony optimization algorithm"

Advisor: Habib Izadkhah

GPA (last 60 credits): 3.11

RESEARCH INTEREST

Computer Vision

Deep Learning

Machine Learning

Medical Informatics

Data Analysis

NLP & Semantic Web

RESEARCH EXPERIENCE

ITU, SP4CING, Research Assistant, Istanbul, Turkey

September 2018–Presents

Deep Learning-Based Segmentation Pipeline for Label-Free Phase- Contrast Microscopy Images.

- Supervisor: Behcet Ugur Toreyin
- Prepared and annotated dataset of breast cancer cells with mesenchymal morphology (MDA-MB-231).
- Performed qualitative and quantitative analyses of morphology and movement of cells from phase-contrast optical microscopy time series.
- Introduced a novel U-Net like architecture by applying the modified ResNet18 as encoding module.
- Improved training time, resiliency of results in the prediction step, and avoiding from overfitting

ITU, Vodafone FutureLab, Research Fellowship, Istanbul, Turkey

May 2019–Presents

Neural Embedding for Social Context in Telecommunication.

- Supervisor: Behcet Ugur Toreyin
- Introduced Res-VGAE, a variational graph autoencoder with a different number of residual connections to alleviate depth problems of graph neural networks.
Showed that residual connections improve the accuracy of the deep graph-based autoencoders.
- Proposed the dynamic Word2vec to examine the social structure of Vodafone customers in an efficient way.

TUBITAK, 1001 project (119E578), Senior Researcher, Istanbul, Turkey

October 2020–Presents

Deep Learning-Based Methods for Analysis of Phase-Contrast Optical Microscopy Time Series Images.

- Supervisor: Devrim Unay

- Performed quantitative and qualitative assertion for wound healing task (the case where cells move as tightly or loosely associated cohesive group).
- Developed a novel method for detection and tracking of wound fronts, segmentation and motility of cells in the wound area

Arcelik Global Co, R&D, Istanbul, Turkey

January 2020–December 2020

Optimization of Multi-Task Network on Surveillance Cameras.

- Supervisor: Nazim Kemal Ure
- Proposed an optimized multi-task model which is compatible with edge devices and accelerated the original architecture with applying the quantization in the cores of the architecture.
- Accelerated the total inference time of the model from 2 fps to 18fps.

ITU, SiMitLab, Research Assistant, Istanbul, Turkey

April 2017–June 2018

Kaggle Dog Breeds Identification with the transfer learning approach.

- Supervisor: Hazim Kemal Ekenel
- leveraged state-of-the-art models on ImageNet datasets.
- Employed the pre-trained model and learned weights to extract the feature from the Kaggle Dog breeds identification dataset.

University of Tabriz, Research Assistant, Tabriz, Iran

September 2015–December 2016

- Advisor: Habib Izadkhah
- Developed a complementary heuristic function for the improvement of gradient response in edge detection.
- Employed optimized parameters for the affection of the method from qualitative and quantitative perspectives.

PUBLICATIONS

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- [1] Indrit Nallbani, Ayanzadeh, Aydin, Keser, Reyhan Kevser, Nurullah Calık, and Behçet Ugur Töreyn. "Deep Graph Autoencoders with Residual Connections" Under submitting to IEEE Transactions on Neural Networks and Learning Systems. 2020-January
- [2] Keser, Reyhan Kevser, Ayanzadeh, Aydin , Behçet Ugur Töreyn, and Nazim Kemal Ure. "Efficient Search for Hint Points in Network Distillation with Layer Clustering", Under submitting to Journal of Neurocomputing. 2020-January.
- [3] Ayanzadeh, Aydin, Özden Yalçın Özuysal, Devrim Pesen Okvur, Sevgi Önal, Behçet Uğur Töreyn, and Devrim Ünay. "Deep Learning based Segmentation Pipeline for Label-Free Phase-Contrast Microscopy Images." In 2020 28th Signal Processing and Communications Applications Conference (SIU), pp. 1-4. IEEE, 2020.
- [4] Keser, Reyhan Kevser, Indrit Nallbani, Nurullah Çalık, Aydin Ayanzadeh, and Behçet Ugur Töreyn. "Graph Embedding For Link Prediction Using Residual Variational Graph Autoencoders." In 2020 28th Signal Processing and Communications Applications Conference (SIU), pp. 1-4. IEEE, 2020.
- [5] Ayanzadeh, Aydin, Hüseyin Onur Yağar, Özden Yalçın Özuysal, Devrim Pesen Okvur, Behçet Uğur Töreyn, Devrim Ünay, and Sevgi Önal. "Cell Segmentation of 2D Phase-Contrast Microscopy Images with Deep Learning Method." In 2019 Medical Technologies Congress (TIPTEKNO), pp. 1-4. IEEE, 2019.
- [6] Binici, Rıfki Can, Umut Şahin, Aydin Ayanzadeh, Behçet Uğur Töreyn, Sevgi Önal, Devrim Pesen Okvur, Özden Yalçın Özuysal, and Devrim Ünay. "Automated Segmentation of Cells in Phase Contrast Optical Microscopy Time Series Images." In 2019 Medical Technologies Congress (TIPTEKNO), pp. 1-4. IEEE, 2019.
- [7] Ayanzadeh, Aydin, Shokoufeh Yazdanian, and Ehsan Shahamatnia. "A New Class of Scaling Matrices for Scaled Trust Region Algorithms." arXiv preprint arXiv:1904.09209 (2019).
- [8] Ayanzadeh, Aydin, and Sahand Vahidnia. "Modified Deep Neural Networks for Dog Breeds Identification." Preprints (2018).

- [9] Ayanzadeh, Aydin, Hossein Pourghaemi, and Yousef Seyfari. "A modified ant colony based approach to digital image edge detection." In 2015 2nd International Conference on Knowledge-Based Engineering and Innovation (KBEI), pp. 504-509. IEEE, 2015.
- [10] Irandoust-Pakchin, Safar, Aydin Ayanzadeh, and Siamak Beikzadeh. "Gaussian three-dimensional kernel svm for edge detection applications." In the International Conference in New Research of Electrical Engineering and Computer Science.
- [11] Hossein Pourghaemi. A, Mohammadreza Daraie, Aydin Ayanzadeh, Reza Taghavi, International Congress on Management, Economy and Business Development 28/10/2015, with title: The Investigation and Ranking of The Effective Factors on Customers' Loyalty of Laleh-Park using AHP.

WORK EXPERIENCE

Arcelik Global Co., R&D, Istanbul, Turkey January 2020–December 2020

Deep Model Compression for Efficient Video Processing on Edge Devices

- Designed and developed multi-task network enterprise to perform people monitoring with surveillance cameras on edge devices.
- Optimized the employed networks by quantization approach, especially with Intel OpenVINO toolkit.

Department of Computer Science, University of Tabriz, Secretary of the Scientific Association, Tabriz, Iran

May 2013- May 2014

HIGHLIGHTED CERTIFICATES

- Deep Learning, a 5-course specialization by deeplearning.ai on Coursera.
- Image and Video Processing: From Mars to Hollywood with a Stop at the Hospital Duke university & Fundamentals of Digital Image and Video Processing by Northwestern University on Coursera.
- Workshop certification, "Software Test and Quality Engineering." The 20th International Symposium on Computer Science and Software Engineering (CSSE 2015), University of Tabriz.

HIGHLIGHTED SKILLS

- Programming Languages: Python, MATLAB, C and C++.
- Deep Learning Frameworks: PyTorch, Tensorflow.
- Python Libraries: OpenCV, NumPy, Scikit-Learn, Matplotlib, Pandas.
- Version Control Systems: Git, GitHub.
- Experienced with local Linux servers and remote servers on Google Cloud Platform, AWS.

HONORS & AWARDS

- Vodafone FutureLab Research Fellowship: Awarded research fellowship among under representative graduate students researching in Informatics Institute.
- One of the top 2% of students in the nationwide university entrance exam among more than 500,000 participants, June 2011.
- Governmental Full Tuition-Waiving Fellowship in B.Sc. degree.

INVOLVEMENT

20th International Symposium on Computer Science and Software Engineering (CSSE 2015), University of Tabriz, Tabriz, Iran March 2015

- Executive Secretary of Committee

2nd Computer Science Conference on Computer and November 2014 Information Technology, University of Tabriz, Tabriz, Iran July 2013

- Executive Secretary of Committee

LANGUAGES

- Azerbaijani (native)
- Farsi/Persian (native)
- English (professional)
- Turkish (professional)

LINKS

- Blog: <http://web.itu.edu.tr/ayanzadeh17>
- GitHub: <https://github.com/Ayanzadeh93>
- LinkedIn: <https://www.linkedin.com/in/ayanzadeh93>

EXTRACURRICULAR ACTIVITIES

- Photography, Camping, Hiking
- Reading Books about Fundamentals of Management, Inspiring Leadership through Emotional Intelligence, Business Strategy, and Novel books.

MEMBERSHIPS & AFFILIATIONS

Vodafone FutureLab

Arcelik Global Cooperation

TÜBİTAK (Scientific and Technological Research Council of Turkey)

Signal Processing for Computational Intelligence Research Group (SP4CING), ITU

Smart Interaction and Machine Intelligence Technologies Lab (SiMiTLab)