Reyhaneh NESHATAVAR

PERSONAL DATA

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RESEARCH INTERESTS

Computer Vision
Deep Learning
3D Vision
Self-supervised Learning
Graph Theory

EDUCATION

- 2020 - present Ph.D in Electrical and Computer Engineering, Seoul National University, Seoul, South Korea.

- 2015 - 2017 M.Sc in Mathematics and Computer Science-Graph Applications, Amirkabir University of Technology, Tehran, Iran.

- 2010 - 2014 B.Sc in Mathematics and it's Application in Industrial Engineering, Amirkabir University of Technology, Tehran, Iran.

- 2006 - 2009 Diploma in Mathematics and Physics, Zahraye Athar High School, Tehran, Iran.

RESEARCH EXPERIENCE

Fall 2021	Self-supervised Image Denoising *Reyhaneh Neshatavar, Mohsen Yavartanoo, Sanghyun Son, Kyoung Mu Lee* *Adviser: Prof. Kyoung Mu Lee* This paper was submitted to CVPR2022
Summer 2018	Applications of Graph Coloring in Schedule Problem(Train Timetabling) *Adviser: Prof. Dariush Kiani* The goal of this research is to present a Graph algorithm to solve Train Timetabling problem. This algorithm uses the Maximum Flow to increase the number of trains in the urban scheduling with a minimum delay. Our algorithm provides the maximum number of trains (in spite of time interference) by creating a Time Maximum Flow. Then, eliminate the interactions of these trains by finding the Maximum Independent Set (MIS). Graduate Thesis

Fall 2014	Speed-up Benders Decomposition using new Cut
	Adviser: Associate Prof. Mehdi Qatee
	Undergraduate thesis

Publications

Summer 2021	**PolyNet: Polynomial Neural Network for 3D Shape Recognition with PolyShapeRepresentation**

Mohsen Yavartanoo, Shih-Hsuan Hung, Reyhaneh Neshatavar, Yue Zhang, Kyoung Mu Lee

In this paper, we propose PolyNet,a DNN-based method over a specific polygon mesh rep-resentation (PolyShape) with a multi-resolution structure. PolyNet contains two operations; (1) a polynomial con-volution (PolyConv) operation with learnable coefficients, which learns continuous distributions as the convolutional filters to share the weights across different vertices, and (2) a polygonal pooling (PolyPool) procedure by utilizingthe multi-resolution structure of PolyShape to aggregate the features in a much lower dimension.

This paper is accepted in 3DV2021.

https://arxiv.org/abs/PolyNet

Summer 2021	**3DIAS: 3D Shape Reconstruction with Implicit Algebraic Surfaces**

Mohsen Yavartanoo, JaeYoung Chung, Reyhaneh Neshatavar, Kyoung Mu Lee

In this paper, we propose an implicit al-gebraic surface with learnable coefficients to represent thesurface of the 3D shape. This approach provides a differ-entiable and compact surface of 3D shapes, which can bepolygonized, rendered, and transformed efficiently. This paper was acctepted in ICCV2021.

https://openaccess.thecvf.com/content/ICCV2021/3DIAS

Winter 2021	**3D Shape Reconstruction Using Multivariate Quartic Polynomial Surface Set** (다변수 사차 다항 곡면 집합을 이용한 삼차원 형상 재구성)

Mohsen Yavartanoo, Jaeyoung Chung, Reyhaneh Neshatavar, Kyoung Mu Lee

This paper is accepted in IPIU2021.

Teaching Experience

- Spring 2021 Seoul National University, Teaching Assistant, Department of Electerical and Computer Engineering, **Introduction to Computer Vision**

- Fall 2015-Winter 2017 Amirkabir Univresity of Technology, Teaching Assistant, Department of Mathematics and Computer Science, **General Mathematics 1 and 2**.

- Winter 2013 Amirkabir Univresity of Technology, Teaching Assistant, Department of Mathematics and Computer Science, **Optimization Research**.

- Teaching Painting as Student Working at Amirkabir Univresity of Technology.

Awards and Scholarships

- **Gold Prize** for the "3D Shape Reconstruction Using Multivariate Quartic Polynomial Functions" paper in the 33rd Workshop on Image Processing and Understanding (IPIU 2021). This award is given because it was selected as an excellent paper.

- Merit-based scholarship (Spring 2021) due to academic excellence and good grades.

- SNU Global Scholarship for one year (2020)

Working Experinence

- Jun.2019-Jan.2020 Seoul National University, CVLab, **Research Intern**.

- 2014-2017 Jahan Pardaz Teb Company, Part Time Job, **Web Designer, Graphic Designer, Film Editor**.

LANGUAGES

PERSIAN:	Native
ENGLISH:	Fluent
KOREAN:	Basic
ARABIC:	Basic

COMPUTER SKILLS

Python, Pytorch, Tensorflow, Matlab, C Programming, AIMMS, HTML, Wordpress CMS, Joomla CMS, Blender, Adobe Photoshop CS8, Illusterator, Corel Draw, Video Edition Edius 7, LaTeX

ART SKILLS

Painting with Oil Color, Creta Color, Water Color
Playing Piano and Guitar

BEHAVIORAL STRENGHTS

Flexibility
Perseverance
Responsibility
Commitment and Service Motive
Problem Solving and Decision Making
Creativity and Innovation
Team Work

REFERENCES

- Professor Lee, Kyoung Mu, Professor of Computer Vision, Machine Learning, Artificial Intelligence, kyoungmu@snu.ac.kr, Department of Electrical and Computer Engineering, College of Engineering, Seoul National University, Seoul, South Korea.

- Professor D. Kiani, Professor of Mathematics-Algebra, dkiani@aut.ac.ir, Department of Computer science and Mathematics, Amirkabir University of Technology, Tehran, Iran.