# Yusuf Yiğit Pilavcı

## PERSONAL DETAILS

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|---|---|
| *Address* | GIPSA-Lab, 11 Rue des Mathématiques, 38400 Saint-Martin-d'Hères |
| *Mobile* | (+33 6 13 44 95 64) |
| *Mail* | yusuf-yigit.pilavci@gipsa-lab.fr |
| *Github* | https://github.com/Y2P |

## EDUCATION

**PhD Student**

2019
Dec.- Present

*GIPSA-LAB, GAIA Team*
*Université Grenoble Alpes*
   Ongoing Thesis about Wilson's Algorithm for Randomized Linear Algebra

**Research Intern**

2019
Mar.- Sept.

*GIPSA-LAB*
*Université Grenoble Alpes*
   Master Thesis on Random Spanning Forests, Theory and Applications

**Master of Science**

2017-2019

*Politecnico di Milano*
*Computer Science and Engineering*
   Final Grade : 108.0 / 110

**Bachelor's degree**

2012-2017

*Middle East Technical University*
*Department of Electrical and Electronics Engineering*
   CGPA 3.79 / 4.00 (10th/375)

**Minor Degree**

2014-2017

*Middle East Technical University*
*Department of Computer Engineering*

## RESEARCH EXPERIENCE

**Wilson's Algorithm for Randomized Linear Algebra**

2019
Dec - Present

*PhD Student*
   Currently working as a PhD student at GIPSA-Lab under supervision of Nicolas Tremblay, Simon Barthelmé and Pierre-Olivier Amblard. The main goal of the thesis is to investigate the applications of the links between algebraic graph theory, random spanning forests (RSF) on the graphs and efficient randomized methods for linear algebra (randomized linear algebra). In previous research, we have already introduced several applications of random forests on graphs,such as estimators for the inverse trace or for graph signal smoothing. The main direction of this thesis is to exploit Wilson's algorithm (a fast way to sample RSFs) in a wider range of linear algebra problems, for example to build estimators for matrix inversion, singular value decomposition, eigendecomposition, etc.

**Random Spanning Forests: Theory and Applications**

2019
March - Sept

*Research Intern*
   Worked as a research intern at GIPSA-Lab, Grenoble/France, under supervision of Nicolas Tremblay, Simon Barthelmé and Pierre-Olivier Amblard. In this research, the links between random spanning

forests and determinantal point processes are investigated by leveraging the tools of linear algebra. In turn, we proposed a novel and efficient algorithm for smoothing graph signals and presented both theoretical and experimental analyses of the proposed method. Presented at ICASSP 2020.

### Spectral Graph Wavelet Analysis on Brain Signals
**2018**
**July - Sept**

*Research Intern*

Worked as a summer intern at IMT Atlantique, Brest/France, under supervision of Assoc.Prof. Nicolas Farrugia. In this research, worked on spectral graph wavelet (SGW) analysis on brain graphs and signals, specifically using FMRI images. The main motivation is to investigate the possible improvements with SGW analysis for the purpose of extracting more meaningful representation of brain signals in terms of machine learning and decoding problems defined in neuro-science literature. Presented at ICASSP 2019

### Signal Processing and Domain Adaptation on Graphs
**2017 - 2019**

*Volunteer Researcher*

Worked on graph signal processing. As an undergraduate researcher, conducted researches on wavelet transform and domain adaptation problems with Ass.Prof Elif Vural. In this project, worked intensively on both mathematical modelling and also implementation. Paper under submission.

### 3D Map Reconstruction for the Endoscopic Capsule Robot
**2016**
**June - Sept**

*Undergraduate Researcher*

Conducted research in collaboration with Max Planck Institute for Intelligent Systems. In this project, 3D Map Reconstruction is applied to videos recorded by robotic endoscopy capsules. Worked on implementation, algorithms and creating a workflow. Paper published in Machine Vision and Applications.

### Control of a 5-DOF Robot Arm (Teachmover)
**2015**
**July - Aug**

*Volunteer Summer Internship*

Worked on design and implementation of a software that controls a robotic arm with 5-DOF.

### Traffic Analysis from Quadrotor Camera
**2014 - 2015**

*Undergraduate Researcher*

Worked on computer vision algorithms for an automated traffic analysis system. Implemented algorithms for image registration, background - foreground subtraction, optical flow.

## INDUSTRIAL EXPERIENCE

### ASELSAN,Ankara,Turkey
**2017**
**Feb - May**

*Candidate Engineer*

Trained and worked as software engineer by using C++/C, Unix and Java

### ASELSAN,Ankara,Turkey
**2016**
**June - July**

*Internship*

Studied and observed on Real Time Operating Systems on multi-core processors

### Huawei, Ankara, Turkey
**2015**
**June - July**

*Internship*

Studied and observed on fiber optical transmission systems and signal modulations

## SKILLS

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| *Languages* | English (fluent), Turkish (native) |
| *Programming* | C/C++, Python, Julia |
| *Software* | MATLAB, LaTeX |