

# VASILIKI KOUNI

## PERSONAL INFORMATION

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**Date of Birth** 19/11/1992  
**Address** 1 Erechtheos, Markopoulo, GR19003, Athens, Greece  
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[www.github.com/vicky-k-19](http://www.github.com/vicky-k-19)  
[www.linkedin.com/in/vicky-kouni](http://www.linkedin.com/in/vicky-kouni)

## RESEARCH INTERESTS

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Compressed Sensing, Sparse Representations, Deep Unfolding, Applied Harmonic Analysis, Learning Theory and their applications in Audio and Image Processing.

## EDUCATION

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**Sandwich PhD student** 10/2020 - 06/2021  
*Chair for Mathematics of Information Processing - RWTH Aachen University, Aachen, Germany*

**Doctoral Candidate** 12/2018 - Present  
*Department of Informatics and Telecommunications - National and Kapodistrian University of Athens, Athens, Greece*

Dissertation: "Compressed Sensing and Sparse Representations in Imaging Sciences"

3-member formal committee: Prof. Theoharis Theoharis (advisor), Prof. Apostolos Giannopoulos, Prof. Sotirios Notaris

External co-advisor: Prof. Dr. Holger Rauhut

**M.Sc. in Applied Mathematics** 10/2015 - 06/2017  
*Department of Mathematics - National and Kapodistrian University of Athens, Athens, Greece*

Thesis: "Fourier Transform on the real line and circle"

Advisor: Prof. Dimitris Gatzouras

Final grade: 8,67/10 (Excellent)

**B.Sc. ("Ptychion") in Mathematics** 10/2011 - 06/2015  
*Department of Mathematics - National and Kapodistrian University of Athens, Athens, Greece*

Specialization in

- Pure Mathematics
- Applied Mathematics

Minor in:

- Computational Mathematics
- Mathematical Education

I am also holder of a Certificate in Informatics (equivalent to ECDL Certificate), given by the Department of Mathematics. I successfully attended the required -for getting the B.Sc.- 36 courses of the undergraduate program in three years and extended their list, by fulfilling my studies with fourteen more courses in four years.

Final grade: 6,92/10 (Very Good)

## PROFESSIONAL EXPERIENCE

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## University Teaching Assistant

2/2019 - Present

*Department of Informatics and Telecommunications - National and Kapodistrian University of Athens, Athens, Greece*

Course: Computer Graphics laboratory (undergraduate)

Duties: assistance in laboratory's exercises

Period: winter semester

Course: Number Theory (undergraduate)

Period: spring semester

Duties:

- teaching half of the semester's syllabus
- solving exercises and discussion upon questions
- correction of mock tests
- management of the course's e-class

## Exams' Supervisor

2/2019 - Present

*Department of Informatics and Telecommunications - National and Kapodistrian University of Athens, Athens, Greece*

In every examining period, I supervise selected courses' exams, as a duty to acquire my PhD.

## Office Employee

02/2012 - 09/2020

*Ilias Kounis - Technical Office, Markopoulo, Attiki, Greece*

Duties:

- Technical Support
- Interpretations
- Secretariat work
- Designing

## PUBLICATIONS

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### Preprints

- V. Kouni, H. Rauhut, T. Theoharis, "Star DGT: a Robust Gabor Transform for Speech Denoising", arXiv preprint arXiv:2104.14468 (2021) (code available at [www.github.com/vicky-k-19/Star-DGT](https://www.github.com/vicky-k-19/Star-DGT)).

### Conferences

- V. Kouni, "Spark Deficient Gabor Frames for Inverse Problems", In 2021 Online International Conference on Computational Harmonic Analysis (Online-ICCHA2021), September 2021.
- V. Kouni, H. Rauhut, "Spark Deficient Gabor Frame Provides a Novel Analysis Operator for Compressed Sensing", In Neural Information Processing. ICONIP 2021. Communications in Computer and Information Science, vol. 1517. Springer, Cham. [https://doi.org/10.1007/978-3-030-92310-5\\_81](https://doi.org/10.1007/978-3-030-92310-5_81) (code available at [www.github.com/vicky-k-19/Star-DGT](https://www.github.com/vicky-k-19/Star-DGT)).
- V. Kouni, G. Paraskevopoulos, H. Rauhut, G. C. Alexandropoulos, "ADMM-DAD net: a deep unfolding network for analysis compressed sensing", to appear in 2022 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), (arXiv:2110.06986, code available at [www.github.com/vicky-k-19/ADMM-DAD](https://www.github.com/vicky-k-19/ADMM-DAD)).

## CONFERENCES AND SEMINARS

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### Presented

- V. Kouni, “Compressed Sensing: what it is, key results and recent trends”, CT Seminar, Research Group Communication Technologies, University of Vienna, Vienna, Austria, 2019.
- V. Kouni, ”Spark Deficient Gabor Frames for Inverse Problems”, RWTH MIP seminar, Online, 2021.
- V. Kouni, ”From Compressed Sensing to Deep unfolding Networks: Redundancy Unites”, Workshop in memory of Dimitris Gatzouras, Department of Mathematics, NKUA, Greece - 12-13/03/2022.

### Attended

- 3rd International Conference in Cryptography, Cyber-Security and Information Warfare, Hellenic Army Academy, Vari, Greece - May 2016.
- First Congress of Greek Mathematicians, Department of Mathematics, NKUA, Athens, Greece - June 2018.
- 13th Athens Colloquium on Algorithms and Complexity, Central Library of NTUA, Athens, Greece - August 2018.
- Optimization and Machine Learning Seminar, Department of Electrical and Computer Engineering, NTUA, Athens, Greece - December 2018.
- Eighth Summer School in Operator Theory, Department of Mathematics, NKUA, Athens, Greece - July 2019.
- Summer Meeting of Young Researchers in Mathematics, Department of Mathematics, NKUA, Athens, Greece - July 2019.
- 14th Athens Colloquium on Algorithms and Complexity, Central Library of NTUA, Athens, Greece - August 2019.
- RWTH MIP seminar, online - 2020 - 2021.

### HONOURS AND AWARDS

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<b>One Year Research Grant (2020 - 2021)</b>	<i>10/2020 - 06/2021</i>
<i>DAAD (German Academic Exchange Service)</i>	
<b>Excellence Award</b>	<i>02/2017</i>
<i>Department of Mathematics - National and Kapodistrian University of Athens, Athens, Greece</i>	

### DIGITAL SKILLS

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#### Programming Languages

- MATLAB
- Python (PyTorch)
- Java (Basics)

#### Operating Systems

- Windows
- Linux

#### Software Packages

- $\text{\LaTeX}$
- MS Office (ECDL Advanced)

## LANGUAGE SKILLS

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### Mother Tongue

Greek

### Other Languages

- English (B2 of European Council)
- French (B2 of European Council)
- Italian (B2 of European Council)

## HOBBIES AND INTERESTS

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Music, poetry, ski, roller-skating, swimming.