

Mate Boban

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CAREER SUMMARY Experienced researcher with focus on applied, experimentally grounded evaluation of wireless communication protocols and models. Active contributor to 3GPP, 5GAA, and ETSI. Participated in four EU-funded projects, including as work package leader and deliverable editor. Results of my research are used actively in academia, industry, and in standard bodies:

- 50+ publications, 20+ as first author, 16 journal papers (12 in IEEE journals), 1300+ citations, H-index: 17
- 15+ patent applications, 4 granted patents (USPTO)
- 12000+ downloads of the simulator I developed (<http://vehicle2x.net/>)
- Significant portion of V2V channel modeling framework used in 3GPP (TR 37.885) and ETSI (TR 103-257-1) is based on my contributions

RESEARCH INTERESTS Wireless communications, vehicular communications (V2X), resource allocation, channel modeling, reinforcement learning

EDUCATION **Carnegie Mellon University, Pittsburgh, PA USA**

Ph.D. in Electrical and Computer Engineering *Dec. 2012*

University of Zagreb, Croatia

Diploma in Informatics, Summa Cum Laude *Nov. 2004*

PROFESSIONAL EXPERIENCE **Huawei European Research Center**

Principal Research Engineer *July 2017 – present*

Senior Research Engineer *Aug. 2015 – July 2017*

Current research focus: I am looking into how machine learning techniques can be used instead of heuristics to efficiently assign resources and predict the channels for V2X communications. In charge of internal research projects on V2X. Won Best Paper Award at EuCAP 2019 and several Huawei awards: Research Quality Award, Cooperation Award, Future Star Award, Diplomacy Award.

External tasks: Standard delegate for 3GPP Release 16 V2X and Industrial IOT; previously: prime Huawei delegate for 5GAA WG1 and ETSI TC ITS. Co-editor of V2X channel model specification in EU project 5GCAR.

NEC Laboratories Europe

Research Scientist *Sept. 2013 – present*

Lead internal research projects on V2X communications. Won two best paper awards in IEEE conferences as key author. Involved in EU and national projects as WP leader and researcher: DRIVE C2X (FP7), TEAM (FP7), CONVERGE (BMBF). Actively contributed to research and standardization within CAR 2 CAR Communication Consortium (member of task force defining the Basic System Profile – document specifying reference standards for V2X deployment) and ETSI TC ITS (contributor to three technical specifications/reports).

Carnegie Mellon University, Dept. of Electrical and Computer Engineering

Postdoctoral Fellow

Dec. 2012 – Aug. 2013

Lead a project on designing a wireless communication framework for Smart Grid. Collaborated with industrial partners on optimizing urban traffic flow through vehicular networking and mobile communications. Advised graduate students.

Carnegie Mellon University, Dept. of Electrical and Computer Engineering and
University of Porto, Dept. of Electrical and Computer Engineering

Research Assistant

Mar. 2009 – Nov. 2012

Developed, implemented, and experimentally validated an efficient vehicle-to-vehicle channel model that, for the first time, incorporated vehicular obstructions into large-scale channel modeling. Implemented the model in Matlab and showed it can scale to networks of thousands of vehicles. Designed and performed five measurement campaigns with over a hundred hours worth of on-the-road experiments to evaluate various aspects of vehicular communications. Mentored junior graduate students, including supervision of an MSc thesis. Teaching assistant on three courses in wireless networking, probability, and mobile communications.

Apple Inc., Cupertino, CA, USA

Exploratory Design (PhD Intern)

May 2011 – Aug. 2011

Carnegie Mellon University, Dept. of Electrical and Computer Engineering

Fulbright Visiting Scholar

Aug. 2007 – Jan. 2009

University of Zagreb, Faculty of Organization and Informatics, Croatia

Lecturer/Research Associate

May 2005 – Aug. 2007

SKILLS

Technical

- Programming Languages: MATLAB, Java, Python
- Developed GEMV², an open source V2V radio propagation simulator in Matlab, available at <http://vehicle2x.net/>
- Extensive experience in experimentation, modeling, and simulation of wireless communication systems
- Software Tools: network simulators (NS2, NS3, JiST/SWANS), Eclipse, L^AT_EX

LANGUAGES

English: fluent; German: intermediate; Portuguese: basic; Croatian: native

SELECTED
HONORS AND
AWARDS

- Best Propagation Paper Award at EuCAP 2019 *Apr. 2019*
- Huawei awards: Excellent Employee Award (2018), Science and Technology Award (2017)
- Best Paper Award (1 out of 90 papers) at IEEE VNC 2014 *Dec. 2014*
- Best Paper Award (1 out of 375 papers) at IEEE VTC2014-Spring *May 2014*
- Fulbright Fellowship – U.S. Department of State *Aug. 2007 – Jan. 2009*

RESEARCH
PUBLICATIONS

1300+ citations, H-index: 17, i10-index: 20

Full details available on Google Scholar and at <http://mateboban.net/>

Selected publications

1. M. Boban et al.: “Multi-band Vehicle-to-Vehicle Channel Characterization in the Presence of Vehicle Blockage”, *IEEE Access*, 2019
2. M. Boban et al.: “Connected roads of the future: Use cases, requirements, and design considerations for vehicle-to-everything communications”, *IEEE Vehicular Technology Magazine*, 2018
3. M. Boban, P. M. d’Orey: “Exploring the Practical Limits of Cooperative Awareness in Vehicular Communications,” *IEEE Transactions on Vehicular Technology*, 2016
4. M. Boban, J. Barros, and O. Tonguz, “Geometry-based vehicle-to-vehicle channel modeling for large-scale simulation,” *IEEE Transactions on Vehicular Technology*, 2014
5. M. Boban, T. T. V. Vinhoza, M. Ferreira, J. Barros, and O. Tonguz, “Impact of Vehicles as Obstacles in Vehicular Ad Hoc Networks,” *IEEE Journal on Selected Areas in Communications*, 2011

PROFESSIONAL
ACTIVITIES

Conference/Workshop Chairing

- TPC co-chair for IEEE VNC 2018 *2018*
- V2X track co-chair for IEEE VTC-2018 Fall *2018*
- V2X track co-chair for IEEE VTC-2018 Spring *2018*
- Automotive track co-chair for IEEE 5G World Forum 2018 *2018*
- Co-chair of IEEE Workshop on V2X Channel Modeling (with IEEE PIMRC) *2017, 2018*
- Co-chair of IEEE Workshop on SmartVehicles *2016, 2017, 2018*

Panelist at IEEE VNC 2016, EUmWeek 2017, WWRF 2017

10+ invited talks at universities, conferences, seminars

10+ research presentations at conferences and seminars

Technical Program Committee for 30+ IEEE conferences and workshops

Reviewer for 10+ IEEE and Elsevier journals and 20+ IEEE and ACM conferences and workshops

Mentored 9 students (3 PhD and 6 MSc/undergrad); member of two PhD thesis committees

REFERENCES

Available upon request