

# SILVIA ROSSI

Post-Doctoral Researcher

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📍 CWI - Amsterdam, The Netherlands

✉ Science Park 123 1097 VH Amsterdam

Post Doctoral Researcher in DIS group at CWI, truly passionate about multimedia and technology. My research interests are at the crossroad between multimedia processing, data processing and analysis, machine learning, and VR communication systems.

## WORK EXPERIENCE

- **Postdoctoral Researcher** Amsterdam, The Netherlands  
*CWI - Distributed and Interactive System (DIS) group* *May 2022 Present*
  - Metrics and methodologies to understand and predict the user behavioural similarities in immersive media experience with 6-DoF, such as point clouds in real-time multimedia systems.
- **Research Internship** Amsterdam, The Netherlands  
*CWI - Distributed and Interactive System (DIS) group* *October 2020 March 2021*
  - Internship on user behavioural analysis in immersive system from 3-DoF to 6-DoF.
- **Research Internship** London, United Kingdom  
*UCL - Department of Electronic and Electrical Engineering* *November 2016 April 2017*
  - Research on interactive communication: optimisation of VR content streaming system.
- **Visiting Research** Kingston upon Thames, United Kingdom  
*Kingston University - WMN research group* *September 2016 October 2016*
  - Further research on master thesis (“Content characterisation of 3D videos”).
- **Visiting Research** Kingston upon Thames, United Kingdom  
*Kingston University - WMN research group* *September 2015 February 2016*
  - Period of exchanging research to conduct my master thesis project (“Content characterisation of 3D videos”).
- **Substitute Teacher** Lugo (RA), Italy  
*ICT (Information and Communications Technology) Institute* *May 2016 - June 2016*
  - Teacher of 3 courses (physic, electronic and electrical) in year 3,4 and 5.

## EDUCATION

- **University College London (UCL)** London, United Kingdom  
*PhD in Electronic and Electrical Engineering* May 2017 - Feb 2022
  - *PhD project title:* Understanding user interactivity for the next-generation immersive communication: design, optimisation, and behavioural analysis
  - *Supervisor:* Dr. Laura Toni.
  - *Expertise and skills include:* mathematical modelling, computer-based simulations, interactive multimedia communication system, video processing, virtual reality, machine learning, optimisation problem.
  - *Principal subjects of study:* development of human-centric and, content-dependent streaming strategies for VR content delivery; analysis of user behaviour during the navigation within immersive content to learn and predict their movements through machine learning techniques and data analysis.
- **University of Bologna (Cesena Campus)** Cesena, Italy  
*MSc in Electronic and Telecommunication Engineering for Energy* September 2013 - March 2016
  - *Grade:* 110/110.
  - *Project title:* Content Characterisation of 3D Videos.
  - *Supervisor:* Prof. Marco Chiani (University of Bologna (Cesena campus), Italy) and Prof. Maria Martini (Kingston University, UK).
  - *Principal subjects of study:* 3D video content analysis, mathematical modelling of depth indicator, subjective test for video quality assessment.
  - 5 month research period at Wireless Multimedia Networking (WMN) laboratory in Kingston University (Kingston upon Thames - UK) partially founded with a travel grant by University of Bologna.
- **University of Bologna (Cesena Campus)** Cesena, Italy  
*BSc in Electronics, Telecommunications, and Information Engineering* September 2009 - March 2013
  - *Grade:* 98/110
  - *Project title:* Elaborazione di segnali video per monitoraggio in situazioni di emergenza (Video signal processing for monitoring in emergency situation).
  - *Supervisor:* Prof. Marco Chiani.
  - *Principal subjects of study:* multi-view video database, simulations to test a video-camera selection algorithm, multi-view system optimisation.
  - Part of the project (i.e., multi-view video database) has been used in researches founded by European project, FP7 Content and cOntext aware delivery for iNteraCtive multimedia healthcaRe applications (CONCERTO).

## SCHOLARSHIPS & AWARDS

- **Fabrizio Lombardi Prize** 2022  
*UCL Department of Electronic and Electrical Engineering*
  - The Lombardi prize is awarded annually by UCL's Department of Electronic and Electrical Engineering to the student who submitted the best PhD thesis over the previous year.

- **Postdoctoral Research Fellowship** 2022  
*ERCIM Alain Bensoussan*
  - One year as postdoctoral research fellow with the project title “Behavioural analysis in 6-DoF VR system”
- **Mobility Grant** 2021  
*Royal Society*
  - 6-month internship as part of the exchange project between UCL and CWI named “User-centric omnidirectional video streaming for VR”  
Royal Society under grant IES—R1—180128.
- **Graduate Research Scholarship** 2017 - 2022  
*University College London (UCL)*
  - Fully funded scholarship for PhD degree.
- **Travel Grant to MMSys** 2018 - 2019  
*ACM SIGMM*
  - June 2019, Amherst - MA, USA.
  - June 2018, Amsterdam, Netherlands.
- **Sponsorship** 2018  
*Institute of Communications and Connected Systems (ICCS) at UCL*
  - Attendance to the 57th FITCE Congress (“Delivery and Consumption of Digital Media”) September 2018, MediaCityUK (Salford - UK).
- **Cisco Prize for the Best Student Poster, Barlow lecture** 2018  
*University College London (UCL)*
- **Travel Grant** 2016  
*University of Bologna*
  - Partial funding for an exchange period abroad to conduct a master thesis project.

## IT SKILLS

MATLAB, Python, ffmpeg, LaTeX, HTML, C/C++ (basic).

## ADDITIONAL INFORMATION

### RELEVANT COURSES

- Coursera, Machine Learning, Stanford University (online) - December 2017 - June 2018.
- UCL Course, Reinforcement Learning Summer 2018.
- Udemy, Machine Learning A-Z by Kirill Eremenko (online), June 2018 - October 2018.
- Coursera, Sequences, Time Series and Prediction, DeepLearning.AI (online), August 2022 - October 2022.

### REFERENCES

- Prof. Pablo Cesar, Centrum Wiskunde & Informatica (CWI), e-mail: [garcia@cw.nl](mailto:garcia@cw.nl).
- Dr. Laura Toni, University College London (UCL), e-mail: [l.toni@ucl.ac.uk](mailto:l.toni@ucl.ac.uk).

## LIST OF PUBLICATIONS

### • JOURNAL PUBLICATIONS

- **S. Rossi**, C. Ozcinar, A. Smolic, and L. Toni “Do Users Behave Similarly in VR? Investigation of the User Influence on the System Design.” *ACM Transactions on Multimedia Computing, Communications, and Applications (TOMM)*, 2020. doi:[10.1145/3381846](https://doi.org/10.1145/3381846).
- P. Gomes, **S. Rossi**, and L. Toni. “AGAR: Attention Graph-RNN for Adaptative Motion Prediction of Point Clouds of Deformable Objects” *Under revision to ACM Transactions on Multimedia Computing, Communications, and Applications (TOMM)*, 2023. arXiv preprint doi:[10.48550/arXiv.2307.09936](https://arxiv.org/abs/10.48550/arXiv.2307.09936).

### • BOOK CHAPTER

- **S. Rossi**, A. Guedes, and L. Toni “Streaming and user behavior in omnidirectional videos.” in *Immersive video technologies*, Elsevier (2022).

### • CONFERENCE PUBLICATIONS

- **S. Rossi**, L. Toni, and P. Cesar. “Correlation between entropy and prediction error in VR Head Motion Trajectories”. In *Proceedings of the 2nd ACM Multimedia (MM) workshop on Interactive eXtended Reality (IXR)*, 2023. doi:[10.1145/3607546.3616805](https://doi.org/10.1145/3607546.3616805)
- **S. Rossi**, I. Viola, L. Toni, and P. Cesar. “Extending 3-DoF Metrics to Model User Behaviour Similarity in 6-DoF Immersive Applications”. In *Proceedings of the 14th Conference on ACM Multimedia Systems (MMSys)*, 2023. doi:[10.1145/3587819.3590976](https://doi.org/10.1145/3587819.3590976)
- P. Gomes, **S. Rossi** and L. Toni. “Explaining Hierarchical Features in Dynamic Point Cloud Processing”. In *IEEE Picture Coding Symposium (PCS)*, 2022. doi:<https://arxiv.org/abs/2209.15557>
- **S. Rossi**, I. Viola, and P. Cesar. “Behavioural Analysis in a 6-DoF VR System: Influence of Content, Quality and User Disposition”. In *Proceedings of the 1st ACM Multimedia (MM) Workshop on Interactive EXtended Reality (IXR)*, 2022. doi:[10.1145/3552483.3556454](https://doi.org/10.1145/3552483.3556454)
- **S. Rossi**, I. Viola, L. Toni, and P. Cesar. “A new Challenge: Behavioural analysis of 6-DoF user when consuming immersive media”. In *Proceedings of IEEE International Conference on Image Processing (ICIP)*, doi:[10.1109/ICIP42928.2021.9506525](https://doi.org/10.1109/ICIP42928.2021.9506525).
- P. Gomes, **S. Rossi** and L. Toni. “Spatio-Temporal Graph-RNN for Point Cloud Prediction”. In *Proceedings of IEEE International Conference on Image Processing (ICIP)*, 2021. doi:[10.1109/ICIP42928.2021.9506093](https://doi.org/10.1109/ICIP42928.2021.9506093)
- **S. Rossi**, I. Viola, J. Jansen, S. Subramanyam, L. Toni, and P. Cesar. “Influence of Narrative Elements on User Behaviour in Photorealistic Social VR”. In *Proceedings of the 13th ACM International Workshop on Immersive Mixed and Virtual Environment Systems (MMVE)*, 2021. doi:[10.1145/3458307.3463371](https://doi.org/10.1145/3458307.3463371).
- **S. Rossi** and L. Toni. “Understanding user navigation in immersive experience: an information-theoretic analysis”. In *Proceedings of the 12th ACM International Workshop on Immersive Mixed and Virtual Environment Systems (MMVE)*, 2020. doi:[10.1145/3386293.3397115](https://doi.org/10.1145/3386293.3397115).
- **S. Rossi**, F. De Simone and L. Toni. “Spherical clustering of users navigating in 360° content”. In *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, 2019. doi:[10.1109/ICASSP.2019.8683854](https://doi.org/10.1109/ICASSP.2019.8683854).

- **S. Rossi** and L. Toni. “Navigation-aware adaptive streaming strategies for omnidirectional video”. In IEEE International Workshop on Multimedia Signal Processing (MMSP), 2017. doi:[10.1109/ICASSP.2019.868385](https://doi.org/10.1109/ICASSP.2019.868385)

- **POSTERS**

- **S. Rossi**, I. Viola, and P. Cesar Behavioural Analysis of Navigation Trajectories in a 6-DoF VR System, in NWO ICT.OPEN, Utrecht (The Netherlands), 2023.