

Cristina Segalin

RESEARCH SCIENTIST

Disney Research LA · 521 Circle seven Dr., Glendale, 91203, California

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Research Interests & Vision

My interest is at the intersection of Machine Learning, Computer Vision, Machine Perception, Human-Computer Interaction, Human Sciences, Social Signal Processing, Affective Computing, Social Media Analysis and Creative AI. I am interested in building integrated systems that can sense human (social, verbal and non-verbal) behavior in order to deliver more seamless experiences. I develop applications for **understanding, modeling and synthesizing social interactions** to provide computers with similar abilities. I am also exploring the potential of AI systems to develop **new forms and processes for human creativity** in order to use them as non-human collaborators and empower creative expression of both artists and amateurs.

I have 3+ years of experience in developing and commercializing AI/ML solutions and 1 year experience leading teams. My efforts led to 20 high impact publications, 10+ invited talks, multimedia coverage and 2 patents.

Other areas I work on: Computational Aesthetics, Object Detection/Recognition, Pose Estimation, Tracking, Action Recognition, Re-Identification, Biometrics, Neuroscience, Computational Ethology, Virtual/Augmented Reality, Brain Computer Interfaces.

Skills

Computer vision, Machine learning, Deep Learning, Convolutional Neural Networks, Recurrent Neural Networks, Generative Adversarial Networks, Data science, Time series analysis, GPU computing and data mining. Good software engineering and web development abilities.

Technical skills

Coding: Python, C++, C#, R, Matlab | **ML Tools:** Tensorflow, Keras, PyTorch, SciPy, Scikit, OpenCV, Pandas | **Web:** HTML5, CSS, JavaScript, NodeJS, Flask | **Tools:** Git, LaTeX, ARToolkit, Flickr API, Twitter API | **OS:** Windows, Linux, Mac OS, ROS

Technical Tools

Inclined to analyze both theoretical and practical problems, able to solve them by employing novel concepts, good communication. Eager to learn and develop new skills. Strong ability to blend in new contexts, good skills in teamwork, good organizational abilities, dynamism. Project and team management.

Soft Skills

Research & Work Experience

Research Scientist: Walt Disney Imagineering R&D

Glendale, California, USA

DISNEY RESEARCH

Aug. 2018 - Present

- Topics: Machine Learning, Deep Learning, Computer Vision, Social Signal Processing, Affective Computing, Creative AI, HCI, Robotics.
- Delivered Computer Vision components embedded into ROS platform as object detector/recognition, smile intensity, emotions classifiers.
- Delivered real-time AI/ML solutions with SOA accuracy.
- Implemented and explored different deep generative models for creative AI and performance for character platform.
- Built several frameworks for evaluating AI systems.
- Collaborated with a team of 15+ international scientists to create an end-to-end character platform.
- Collaborated with a team of 10+ international scientists to create an end-to-end system to sense people and surrounding environment.
- Collaborated with different teams to collect datasets for ML tasks.
- Organizer of EMERGENT workshop at Affective Computing & Intelligent Interaction 2019.
- Mentored several international students during their internship.
- Collaborated on 2 patents.
- Taught AI/ML class to Walt Disney Imagineering executives.

Postdoctoral Scholar: CalTech

Pasadena, California, USA

CALTECH (CALIFORNIA INSTITUTE OF TECHNOLOGY)

Aug. 2016 - Aug. 2018

- Topics: Machine Learning, Deep Learning, Computer Vision, Computational Ethology, Neuroscience
- Advisor: Pietro Perona
- Designed, developed and delivered software to analyze mice social interactions in videos. Designed and implemented Deep Learning mice detector, pose estimation, tracking and behavior classifier in Tensorflow. The system is optimized and integrated into a GUI used by the Computational Neurobiology Lab at Caltech. The system also allows to train new behavior classifiers using the GUI interface and few annotation samples.

Research Intern: Disney Research

Pittsburgh, USA

DISNEY RESEARCH

Feb. 2016 - Apr. 2016

- Topics: Machine Learning, Computer Vision, Psychology, Sociology
- Advisor: Maarten Bos
- Developed a system to predict personal appeal of marketing images using computational methods. Extracted features from images, applied ML algorithms to predict the personality of consumers to which the image appeals most. We showed that image-person fit adds incremental predictive power over the images' general appeal when predicting consumers' attitudes and purchase intentions.

Research Assistant: School of Computer Science

UNIVERSITY OF BIRMINGHAM

- Topics: Machine Learning, Computer Vision, Social Media Analysis
- Advisor: Mirco Musolesi
- Implemented system to predict retweets from images and social network on Twitter, showing which features have most impact in the retweet process and how this study can be used to design viral tweets.

Birmingham, UK

Oct. 2014 - Dec. 2014

Research Assistant: School of Computing Science

UNIVERSITY OF GLASGOW

- Topics: Machine Learning, Computer Vision, Social Media Analysis, Psychology, Sociology, Perception, Personality
- Advisor: Alessandro Vinciarelli
- Implemented system to predict self and perceived personality traits from Flickr image preferences. cross-culturally

Glasgow, Scotland

Apr. 2013 - Aug. 2013

Research Assistant: IIT

IIT (ITALIAN INSTITUTE OF TECHNOLOGY)

- Topics: Social Media Analysis
- Advisor: Vittorio Murino
- Built API to scrape and query Pinterest and Flickr Social Media before the official APIs were available.

Genova, Italy

Jun. 2012 - Nov. 2012

Research Assistant: VIPS Lab

UNIVERSITY OF VERONA

- Topics: Machine Learning, Computer Vision, Social Media Analysis
- Advisor: Marco Cristani
- Implemented system for re-identification of subject through the way they chat on Skype. Collected the dataset, design and extracted low level features from turn-taking conversations, implemented machine learning method for re-identification. We showed the importance of the selected features for the purpose of re-identification.

Verona, Italy

Feb. 2012 - Apr. 2012

Research Assistant: VIPS Lab

UNIVERSITY OF VERONA

- Topics: Machine Learning, Computer Vision
- Advisor: Umberto Castellani
- Designed, implemented and delivered Face Recognition system and device used to grant access to the university Visual Computing Lab.

Verona, Italy

Sep. 2010 - Dec. 2010

Education

Ph.D., Computer Science - Doctoris Europaei

UNIVERSITY OF VERONA

- Thesis title: A Social Signal Processing Perspective on Computational Aesthetics: Theories and Applications.
- Topics: Social Signal Processing, Machine Learning, Computer Vision, Computational Aesthetics, Social Media Analysis, Biometrics, Image Processing
- Advisor: Marco Cristani

Verona, Italy

Jan. 2013 - Dec. 2015

M.Sc., Computer Engineering and Computer Science

UNIVERSITY OF VERONA

- Thesis title: Statistical Analysis of Skype Conversations: Recognizing Individual by their Chatting Style.
- Topics: Re-identification, Social Signal Processing, Biometrics
- Advisor: Marco Cristani

Verona, Italy

Oct. 2010 - Jul. 2012

B.Sc., Multimedia Information Technology

UNIVERSITY OF VERONA(1ST IN ITALY OFFERING THIS DEGREE)

- Thesis title: Sistema di Rilevamento Automatico e Riconoscimento Volti: Aspetti Metodologici e Pratici.
- Topics: Face Recognition, Re-identification
- Advisor: Umberto Castellani

Verona, Italy

Oct. 2007 - Dec. 2010

High School Diploma in Accounting and Expert Programmer

AULO CECCATO

Thiene, Italy

Sep. 2002 - Jul. 2007

Fellowships & Awards

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| 2015 | Best Poster Award , International Computer Vision Summer School best poster presentation. | ICVSS |
| 2013 | Erasmus Placement , Grants for PhD students for placements in companies, facilities in one of the countries participants to the LLP program. | Verona, Italy |
| 2013-2015 | PhD Scholarship , University of Verona supported my Ph.D. | Verona, Italy |

Publications

Published **18 peer-reviewed publications** and **2 patents**: 9 conference papers and 19 short/workshop papers, in the venues of ACII, APS, ACM MM, WIML, ICMI, ACCV, ICIP, ACM MM, CIARP, AVSS, ICPR, WIAMIS, and journal papers *IEEE Transactions on Affective Computing*, *IEEE Transactions on Information Forensics and Security*, *Computer Vision Image Understanding*, *Journal of Consumer Psychology*

Conference Papers

- [C13] P. Witzig, R. J. Kennedy, and **C. Segalin**. "Smile Intensity Detection in Multiparty Interaction using Deep Learning". *Proceedings of the International Conference on Affective Computing and Intelligent Interaction*, 2019
- [C12] **C. Segalin**, F. Celli, B. Lepri, M. Kosinski, M. Cristani, and L. Polonio. "What your Facebook Profile Picture Reveals about your Personality: A Feature-based Approach". *ACM Multimedia*, 2017
- [C11] **C. Segalin**, A. Perina, and M. Cristani. "Biometrics on Visual Preferences: a "Pump and Distill" Regression Approach". *IEEE International Conference on Image Processing*, 2014
- [C10] **C. Segalin**, A. Perina, and M. Cristani. "Personal Aesthetics for Soft Biometrics: a Generative Multi-resolution Approach". *Proceedings of the International Conference on Multimodal Interaction*, 2014
- [C9] **C. Segalin**, A. Perina, and M. Cristani. "Recognizing People by Their Personal Aesthetics: a Statistical Multi-level Approach". *Proceedings of the Asian Conference on Computer Vision*, 2014
- [C8] M. Cristani, A. Vinciarelli, **C. Segalin**, and A. Perina. "Unveiling the multimedia unconscious: Implicit cognitive processes and multimedia content analysis". *Proceedings of the ACM international conference on Multimedia*, 2013
- [C7] P. Lovato, A. Perina, D. S. Cheng, **C. Segalin**, N. Sebe, and M. Cristani. "We like it! Mapping image preferences on the counting grid." *IEEE International Conference on Image Processing*, 2013
- [C6] A. Pesarin, M. Tait, A. Vinciarelli, **C. Segalin**, G. Bilancia, and M. Cristani. "Generative modelling of dyadic conversations: characterization of pragmatic skills during development age". *Multimodal Pattern Recognition of Social Signals in Human-Computer-Interaction*, 2013
- [C5] G. Roffo, M. Cristani, F. Pollick, **C. Segalin**, and V. Murino. "Statistical Analysis of Visual Attentional Patterns for Video Surveillance". *Progress in Pattern Recognition, Image Analysis, Computer Vision, and Applications*, 2013
- [C4] G. Roffo, **C. Segalin**, A. Vinciarelli, V. Murino, and M. Cristani. "Reading between the turns: Statistical modeling for identity recognition and verification in chats". *IEEE International Conference on Advanced Video and Signal Based Surveillance*, 2013
- [C3] **C. Segalin**, A. Pesarin, A. Vinciarelli, M. Tait, and M. Cristani. "The expressivity of turn-taking: Understanding children pragmatics by hybrid classifiers". *International Workshop on Image Analysis for Multimedia Interactive Services*, 2013
- [C2] M. Cristani, G. Roffo, **C. Segalin**, L. Bazzani, A. Vinciarelli, and V. Murino. "Conversationally-inspired stylometric features for authorship attribution in instant messaging". *Proceedings of the International Conference on Multimedia*, 2012
- [C1] M. Tait, M. Cristani, A. Pesarin, **C. Segalin**, and G. Bilancia. "Lo sviluppo delle competenze pragmatica tra i 3 e gli 8 anni". *XXI Congresso Nazionale AIRIPA, Bari*, 2012

Journal Papers

- [J5] S. C. Matz, **C. Segalin**, D. Stillwell, S. R. Müller, and M. W. Bos. "Predicting the Personal Appeal of Marketing Images Using Computational Methods". *Journal of Consumer Psychology*, 2019, 29.3, (pp. 370–390)
- [J4] M. Qiao, T. Zhang, **C. Segalin**, S. Sam, P. Perona, and M. Meister. "Mouse Academy: high-throughput automated training and trial-by-trial behavioral analysis during learning". *BioRxiv*, 2018
- [J3] **C. Segalin**, D. S. Cheng, and M. Cristani. "Social Profiling through Image Understanding: Personality Inference using Convolutional Neural Networks". *Computer Vision and Image Understanding*, 2016
- [J2] **C. Segalin**, A. Perina, M. Cristani, and A. Vinciarelli. "The pictures we like are our Image: Continuous mapping favored pictures into self-assessed and attributed personal traits". *IEEE Transactions on Affective Computing*, 2015, 8(pp. 268–285)
- [J1] P. Lovato, M. Bicego, **C. Segalin**, A. Perina, N. Sebe, and M. Cristani. "Faved! Biometrics: Tell Me Which Image You Like and I'll Tell You Who You Are". *IEEE Transactions on Information Forensics and Security*, 2014, 9.3, (pp. 364–374)

Patents

- [P2] S. D. Lombardo, **C. Segalin**, L. Chen, R. D. Navarathna, and S. M. Mandt. *Automated Content Evaluation Using a Predictive Model*. 18-DIS-326-MEDIA-US-UTL, 2018
- [P1] S. Matz, **C. Segalin**, and M. W. Bos. *Personality-tailored advertising: Matching images to personality using automatic features extraction*. 16-DIS-189-DRP, 2016

Tech Report

- [T1] **C. Segalin**, A. Vinciarelli, M. Cristani, and M. Musolesi. *Visual Contagion: Understanding the Influence of Textual, Visual and Social Cues on Information Propagation in Twitter*, 2014

In Preparation

- [U1] **C. Segalin**, A. Kennedy, T. Karigo, J. Williams, A. Anderson, and P. Perona. "MARS: An automated system for measuring the pose and actions of laboratory mice during social behavior." *Nature*, 2019

Talks & Presentation

- Feb. 2018 **Legendary Analytics**, Social Profiling through Image Understanding. *Boston, MA*
- Feb. 2018 **MIT Media Lab**, Unveiling the Multimedia Unconscious: Implicit Cognitive Processes and Personality Inference through the Images we Like *Boston, MA*
- Feb. 2018 **MIT Media Lab**, Social Profiling through Image Understanding *Boston, MA*
- Oct. 2017 **ACM Multimedia**, What your Facebook Profile Picture Reveals about your Personality: A Feature-based Approach *Mountain View, CA*
- May. 2018 **Association for Psychological Science Convention**, Social Profiling through Image Understanding *Boston, MA*
- Dec. 2016 **Neurips**, Social Profiling through Image Understanding *Barcelona, SP*
- Feb. 2016 **CalTech**, Computational Aesthetics for Multimedia, a Social Signal Processing Perspective *Pasadena, CA*
- Oct. 2015 **UNSW School of Psychology**, Computational Aesthetics for Multimedia *Sydney, AU*
- Oct. 2015 **UTS**, Computational Aesthetics for Multimedia *Sydney, AU*
- Oct. 2015 **NICTA**, Computational Aesthetics for Multimedia *Canberra, AU*
- Jul. 2015 **ICVSS - Best poster award**, Computational Aesthetics for Multimedia: a Social Signal Processing Perspective *Sicily, IT*
- Nov. 2014 **ACCV**, Recognizing People by Their Personal Aesthetics: a Statistical Multi-level Approach *Singapore, SG*
- Oct. 2014 **ICIP**, Recognizing People by Their Personal Aesthetics: a Statistical Multi-level Approach *Paris, FR*

Service & Leadership

Academic Reviewer

- Conference: ACCV, ICCV, CVPR, ECCV, NIPS, CHI, ICML, ICLR
- Journal: PLOS ONE, NEUROCOM, IEEE Multimedia, Affective Computing, AIMed

Program Committee

- 3rd Workshop on Media Analytics for Societal Trends at ACM MM
- 2nd Workshop on Media Analytics for Societal Trends at ACM MM

EMRGENT Workshop

ORGANIZER (WORKSHOP AT AFFECTIVE COMPUTING & INTELLIGENT INTERACTION 2019)

- Lead the effort to organize the first workshop on Emotions and Emergent States in Groups.
- Some of the top affective computing scientists attended the workshop.

Cambridge, UK

Sep. 2019

Disney Research Annotation Team Management

MANAGER

- Lead team of annotators performing tasks for NLP, Computer Vision and other projects
- Coordinated annotators' work schedule based on projects need
- Coordinated communication between annotators and project leaders

Disney Research

Member

- Association for Computing Machinery (ACM)

Teaching & Mentoring

AI/ML Course (WDI R&D)

WALT DISNEY IMAGINEERING COURSE TO EXECUTIVES

- Introduced concepts of AI/ML and their application to WDI R&D problems
- Introduced ML types (supervised, supervised, reinforcement learning)
- Showcase of everyday ML use and future projects opportunities
- Guided executives and leaders to understand how ML can help them to make decisions

Glendale, California, USA

July. 2019

Deep Learning Applications

DEPT. OF COMPUTER SCIENCE, UNIVERSITY OF VERONA

- Showcase of everyday DL use and applications

Verona, Italy

Oct. 2014

Introduction to Deep Learning

DEPT. OF COMPUTER SCIENCE, UNIVERSITY OF VERONA

- Introduced concepts and history of Deep Learning
- Introduced types of Deep Learning Networks (CNN, RNN, Autoencoders), Backprop

Verona, Italy

July. 2014

Workshop Mentor

- 2019 **Women in Machine Learning**, NeurIPS *Vancouver, Canada*
- 2019 **Women in Computer Vision**, CVPR *Lonch Beach, CA*
- 2018 **Women in Machine Learning**, NeurIPS *Montreal, Canada*

Research Mentor

Disney Research

Glendale, CA

MS STUDENT: Bryan J. Loh
UNDERGRAD STUDENT: Philine Witzig

CalTech

Pasadena, CA

MS STUDENT: Jennifer Sun
UNDERGRAD STUDENT: Zack Polizzi, David Mace

University of Verona

Verona, Italy

MS STUDENT: Francesca Zerbato, Luca Brunelli, Marco Fanini, Walter Riviera, Elena Boschetti

Open Source Datasets & Code

PsychoFlickr: Big-Five OCEAN personality traits and favorite images dataset

- 300 Subjects, 60000 images, both self and perceived personality traits
- Code to extract visual features (Matlab)

FavedBiometrics: Favorite images from Flickr

- 500 Subjects, 100000 Flickr favorite images
- Code to extract visual features (Matlab)

Mice Action Recognition System (MARS)

- 10000 top and front frames with pose keypoints annotations
- 80 10mins videos of mice having social interactions
- Code to train mice detector, pose estimation and behavior classifier (Tensorflow, scikit-learn), PyQt GUI interface

Press & Media

DMN, 5 Lessons to Learn from a Disney Research Scientist.

Street Fight, Disney's Deep Dive on Personality Research, and Its Potential Implications for Brand Marketers.

Contagious, Opinion / What Machine Vision means for creativity.

Wikipedia, Social Profiling