Guanqun CAO

Born in Beijing, P.R. China (1986)
Long-term EU resident (P-EU)
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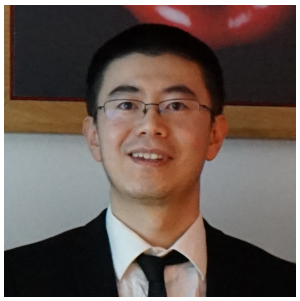

Brief Intro

I am an automotive engineer with strong background in machine learning, pattern recognition and image processing. Meanwhile, I remain engaged in academic activities and collaborations.

Several Highlights

- PhD in Data Mining and Machine Learning leading to top publications, and hold privileged engineering degrees and several awards.
- My expertise lies in exploiting machine learning and pattern recognition techniques in numerous application, including computer vision and safety for autonomous driving system.
- Full-stack skills in data science from applied statistics, data mining to various computing infrastructure development.
- Adaptive to dynamic work place, a great team player, and excited to work in a diverse team.
- Beijing-born and EU-educated. Used to study and work for long term in 8 countries, including 6 different EU countries, China and USA.

Education

Tampere University, Tampere, Finland
PhD (with Distinction) in Computing Science 12/2011—04/2018

CIMET Master Erasmus Mundus, Univ. Jean Monnet, France; NTNU, Norway; Univ. of Granada, Spain
M.S. in Color Informatics and Media Technology 09/2008—09/2010

Huazhong University of Science and Technology, Wuhan, Hubei Province, P.R. China
B.Eng in Electronic & Information Engineering 09/2004—06/2008

University of Birmingham, Birmingham, UK
B.Eng(*Hons*) in Electronic & Computer Engineering 10/2007—06/2008

Work Experience

1. Data Scientist / Deep Learning Engineer at Volvo Cars. Apr. 2018 - Currently
    - Data analytics for autonomous driving validation & verification.
    - Developed perception algorithms, e.g. an end-to-end solution for camera-based object detection and tracking on NVidia Drive PX-2. The robust online multi-object tracking algorithm achieves the start-of-the-art results.
    - Initiated and maintained the computing and data storage facilities for the team.
    - First Engineer at Data Intelligence Team of Autonomous Driving section
    - Tech lead of 3 trainees/engineers
2. Visiting Researcher to Tampere University, Finland and Wuhan University, China. Jan. 2019 - Currently
3. Contract Researcher with Intel Finland Corp. Sept. 2017 - Apr. 2018
    - Machine learning in mobile imaging in the NSF CVDI programme together with Business Finland.
4. Contract Researcher with Tieto Oy, Sept. 2016 - Aug. 2017
    - Work on research project of 'Comparative Knowledge Discovery: Analyzing, Understanding and Visualizing Rankings' in the site of the NSF CVDI programme.
5. Visiting researcher to University of Lousianna at Lafayette and University of Virginia, April 2017.
    - Multi-facet object ranking.
6. Researcher at Tampere University of Technlogy, Jan. 2010 - Dec. 2017
    - researched and developed new feature descriptors for large scale scene recognition techniques collaborated with Alma Media
    - researched on image/object segmentation techniques
    - took part in MSR-Bing challenge 2013 and develop automation tools on the supercomputer for training machine learning models
    - researched on large scale learning algorithms in the cloud
    - supervised 1 master thesis worker on machine learning for color constancy with Intel
7. Research assistant at Laboratoire Hubert Curien, French National Center for Scientific Research (CNRS). 2009.7-2009.8

    Blur identification, perceptual image quality assessment.

Teaching Experience

Teaching assistant in SGN-3016 Digital Image Processing I, SGN-5508 Multimedia Analysis. SGN-31006 Image and Video Processing Techniques

Publication

- **Guanqun Cao**, Alexandros Iosifidis, Moncef Gabbouj, Vijay Raghavan, Raju Gottumukkala, Deep Multi-view Learning to Rank, IEEE Trans. on Knowledge and Data Engineering (TKDE), Accepted, Sept 2019. DOI: 10.1109/TKDE.2019.2942590
- **Guanqun Cao**, Alexandros Iosifidis, Ke Chen, Moncef Gabbouj, Generalized Multi-view Embedding for Visual Recognition and Cross-modal Retrieval, IEEE Trans. on Cybernetics (T-Cyb), Sept 2017. DOI: 10.1109/TCYB.2017.2742705
- **Guanqun Cao**, Alexandros Iosifidis, Moncef Gabbouj, Neural class-specific regression for face verification, IET Biometrics 2017. DOI: 10.1049/iet-bmt.2017.0081
- **Guanqun Cao**, Alexandros Iosifidis, Moncef Gabbouj, Multi-view Nonparametric Discriminant Analysis for Image Retrieval and Recognition, IEEE Signal Processing Letters, Sept 2017. DOI: 10.1109/LSP.2017.2748392
- **Guanqun Cao**, Muhammed Waris, Alexandros Iosifidis, Moncef Gabbouj, Multi-modal Subspace Learning with Dropout regularization for Cross-modal Recognition and Retrieval, The sixth International Conference on Image Processing Theory, Tools and Applications, 2016. (**Best student paper award**).
- **Guanqun Cao**, Iftikhar Ahmed, Honglei Zhang, Weiyi Xie, Moncef Gabbouj, *Balance Learning to Rank in Big Data*, 22nd European Signal Processing Conference 2014 (Eusipco 2014), IEEE.
- J Raitoharju, H Zhang, E C Ozan, M A Waris, M Faisal, G Cao, M Roininen, I Ahmad, R Shetty, S P C, S Uhlmann, K Samiee, S Kiranyaz, M Gabbouj (2014) MUVIS: A Solution to MSR-Bing Challenge on Image Retrieval 2014 IEEE International Conference on Multimedia & Expo (ICME 2014) Workshop.
- **Guanqun Cao**, Faouzi Alaya Cheikh, *Salient region detection with opponent color boosting*, EUVIP 2010, 2nd European workshop on visual information processing, Paris, July, IEEE, 2010.
- **Guanqun Cao**, Marius Pederson, Zofia Baranczuk, *Saliency Models as Gamut-Mapping Artifact Detectors*, CGIV 2010 - Fifth European Conference on Color in Graphics, Imaging and Vision , Joensuu, Finland, Jun, IS&T, 2010. (Oral presentation at Color Reproduction session)
- Aitor Alvarez, **Guanqun Cao**, Sheikh Faridul Hasan, Yu Hu, *Combining Color Descriptors for improved Codebook Model- Based Image Retrieval*, CGIV 2010 - Fifth European Conference on Color in Graphics, Imaging and Vision , Joensuu, Finland, Jun, IS&T, 2010. (Poster presentation during the Interactive Session.)

Talks

- "Geo-spatial Data Mining Using **R!**", Why R? 2020 Conference.
- "How will Big Data transform our life?", to students of France Telecom, at New Factory Tampere, July, 2014

Honors

1. Tampere University Graduation Award for PhD With Distinction (€1,500), 2020.
2. Travel Grant (€3000) for Excellent PhD Researchers in Guangdong Innovation Programme, Oct 2019
3. Best student paper award at IEEE IPTA 2016.
4. Member of the 2nd winning team in Microsoft Research-Bing challenge 2014
5. Erasmus Mundus Scholarship (€42,000 in total) funded by the European Union, Aug 2008 to Aug 2010
6. Technicolor award for the project contest winners in 2009 (€1,500 in total)
7. International Studentship, University of Birmingham, October 2007

Skills and Hobbies

Professional skills: Machine/Statistical/Deep Learning, Embedded & Cloud Computing, Multimedia Information Retrieval, Image Processing.

Computer skills: Python, Shell Scripting, Matlab, R, Latex, C/C++, GIMP, Excel, Linux

Device capability: Spectral photometer, spectral colorimeter, SMI high-frequency eyetracker

Language Skills: English (excellent), French (intermediate), Spanish (basic), Chinese (native).

Professional services: IEEE Member, reviewers for IEEE Trans. on Cybernetics, IEEE Trans. on Neural Networks and Learning Systems, IEEE Trans. on Vehicular Technology, Journal of Visual Communication and Image Understanding, International Conference on Image Processing 2019, etc.

Hobbies: Swimming, photography, archery, backpacking.