Sergey Tulyakov

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Summary

Specializes in 2D and 3D computer vision, machine learning, data analysis and digital signal processing. Has extensive background in software engineering.

Current research interests: Head pose estimation and tracking in 2D and 3D, higher-level activity recognition such as facial expressions, heart rate recognition from video, with particular emphasis on facial analysis in difficult realistic scenarios.

Technical skills: C++, Python, C#, Qt, Boost, CMake, Shell
Scientific computing: OpenCV, PointCloudLibrary(PCL), scientific python stack, Matlab

Education

Oct 2012 – present	University of Trento (Trento, Italy) **PhD in Computer Science.** Thesis: Unconstrained 2D and 3D face analysis
Sept 2009 – July 2010	Belarusian State University of Informatics and Radioelectronics (Minsk, Belarus) Master in Computer Science. **Final grade: 9 out of 10**
Sept 2004 – July 2009	Belarusian State University of Informatics and Radioelectronics (Minsk, Belarus) Bachelor in Computer Science. **Diploma with distinction. GPA 8.9. Final grade: 10 out of 10**

Scientific Projects

- The **ACANTO** project aims at increasing the number of older adults who engage in a regular and sustained physical activity. Developed a real-time method for instantaneous heart rate recognition from face videos.
- The **DALi - Devices for Assisted Living** project aimed at extending autonomous live of elderly people beyond home. Developed a real-time system for head pose analysis, tracking and facial expression recognition under a wide range of head poses.
- The purpose of the **PerTe - Persuasive Technology** project was to aid groups of people in a brainstorming environment. Worked on user monitoring part: track faces, measure attention given/received and analyze speech activity of the subjects.

Personal Projects

- **FaceCept - Face perCept** is a technology that allows real-time analysis of people's faces. Key features: gender, age, facial expression, new/returning, attention time recognition. The technology is cross-platform: it runs even in a browser.
- **FaceCept3D** is a flexible **open-source** technology for 3D face analysis and recognition, available on GitHub. Key features: head pose, facial expression and action units recognition in real time. FaceCept3D handles head pose ranges much wider than other systems.

Enterprise Experience

July 2010 – Sept 2012

Senior software engineer, project lead at HiQo Solutions, Inc (Minsk, Belarus)

Carried out technical analysis, team management, programming and scientific programming in various projects:

- **Intellectual Property Violation Detection Tool**. The project aimed at automating the process of detecting images copyrighted as EuroCities AG maps. Designed and developed a new approach for detection of the copyrighted images. C++, OpenCV, Matlab
- **CaseMate Internal Production Management System** The project was aimed at creating a web management system for all the stages of smartphones cases production. ASP.NET MVC, C#, JQuery
- **David Systems MultiTrack**. MultiTrack is powerful multichannel audio editor that allows the user to drag and drop audio templates to the timeline, play them according to their position, settings and various audio filters applied. C++, Stl, Boost, MFC

June 2006 – June 2010

Software engineer at Todes, Ltd. (Minsk, Belarus)

Worked at numerous projects related to Belarusian Border Control System:

- **Belarusian Border Control System**. A set of projects aimed at automating workflow of border control operators. Developed several automated workplaces. Delphi, Oracle Database
- **Computer Face Recognition System**. Developed a face verification system for Machine Readable Travel Documents. C++, Qt, OpenCV, Matlab
- **Analysis and Forecasting for Belarusian Border Control System**. Developed a cross-platform neural-network forecasting engine to predict daily passenger flow through a checkpoint based on statistical data. Java, Oracle Database

Publications

[1] S. Tulyakov and N. Sebe. **Regressing a 3D Face Shape from a Single Image**. In *International Conference on Computer Vision*, 2015.

[2] S. Tulyakov, R. L. Vieriu, E. Sangineto and N. Sebe. **FaceCept3D: Real Time 3D Face Tracking and Analysis**. In *International Conference on Computer Vision Workshops*, 2015.

[3] R. L. Vieriu, S. Tulyakov, E. Sangineto, S. Semeniuta, and N. Sebe. **Facial Expression Recognition under a Wide Range of Head Poses**. In *Face and Gesture Recognition*, 2015.

[4] S. Tulyakov, R. L. Vieriu, S. Semeniuta, and N. Sebe. **Robust Real-Time Extreme Head Pose Estimation**. In *Internation Conference on Pattern Recognition*, 2014.

References (available upon request)