



Roberto Annunziata

Curriculum Vitae

"Becoming very rich in terms of money is just a matter of wearing the right glasses, merely based on the Fourier transform."

Education

- 24/11 - 7/12, 2013 **First REVAMMAD training event in Lincoln (UK)**,
Clinical background on retina. Basic vascular modelling. Basic retinal imaging. Research skills. Brainstorm/team-building activities. Collaborative activities to generate initial ideas to address key research problems (identified by academic team), including presentation to and critique by whole ESR group as well as activities to encourage relations amongst all network participants..
- 26/08/2013 - present **PhD in Computing**,
School of Computing - University of Dundee, Dundee - UK.
Supervisor Professor Emanuele Trucco
- 2010–2012 **Master of Science in Communications and Electronics Engineering**,
Università degli Studi di Siena, Siena - ITALY.
110/110 cum Laude - Overall Grade Point Average: 30/30.
- 2007–2010 **Bachelor of Science in Communications Engineering**,
Università degli Studi di Siena, Siena - ITALY.
110/110 cum Laude - Overall Grade Point Average: 29.926/30.

Masters Thesis

- Title *A novel unsupervised approach for automatic blood vessels segmentation by using exudates estimation, eigenvalue analysis and regularization*
- Supervisors Professor A. Mecocci & Professor A. Garzelli
- Examiner Professor M. Barni
- Description The proposed method greatly outperforms the state-of-the-art methods both for quantitative evaluation and visual inspection. A novel inpainting filter called NEBF has been proposed during this work as the key idea to overcome the deepest problems related to vessel segmentation.

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1/3

Awards

28/06/2013 **Certificate of Excellence**,
Best graduate in Electronics and Communications Engineering,
Università degli Studi di Siena, Siena - ITALY.

Experience

Vocational

26/08/2013–
present **Marie Curie Early Stage Researcher**, SCHOOL OF COMPUTING, UNIVERSITY OF DUNDEE, Dundee, United Kingdom.

REVAMMAD project (REtinal VAScular Modelling, Measurement And Diagnosis): research and development of image processing techniques for characterization and detection of lesions related to vein/artery occlusion and ischemia, feature selection for specific lesion classification and validation on annotated and weakly annotated data sets. OPTOS plc will provide its UWFV SLO (Ultra Wide Field of View Scanning Laser Ophthalmoscopes) images to assess these techniques through a novel retinal imaging method.

Supervisors & collaborators Professor Emanuele Trucco (University of Dundee), Dr J.C.B. Jacobsen (University of Copenhagen), Dr B. Dhillon (Ninewells Hospital, Dundee) and OPTOS plc (Edinburgh)

9/1/2013– **Research Assistant**, UNIVERSITÀ DEGLI STUDI DI SIENA, Siena, ITALY.

31/07/2013 Medical Image Processing: research and development of novel approaches to automatically obtain global measurements (e.g. mean vessel length, mean vessel width, tortuosity) along with topological analysis (e.g. number of branch points, end points) related to retinal vessels, starting from the automatic vascular-tree segmentation developed during the Master thesis. Furthermore, a user interface has been developed to dynamically interact with the fundus image, with the aim to obtain local measurements related to the selected vessel. The main purpose was to develop a reliable automatic mass-screening architecture, a milestone in this field of medical image processing.

Detailed achievements:

- Improved programming skills (C/C++/Visual C++/ MATLAB/OpenCV)
- Poster presentation at the International Conference ARVO/ISIE on medical image processing (May, 2013)

01/05/2012– **Stage**, UNIVERSITÀ DEGLI STUDI DI SIENA, Siena, ITALY.

30/09/2012 Medical Image Processing: investigation on the retinal blood vessels segmentation methods, and development of a new approach.

Academic Projects:

Advanced study of Noiseless Coding of Correlated Information Sources published the first time by D.Slepian and J. Wolf.

Characterization of a chemical sensor built through the screen-printer: design and development of the front-end electronics and of the data acquisition system.

Performance evaluation of CMOS logic and DCVSL gates in sub-threshold for Ultra-Low Power applications.

Design of a fifth order microstrip band-pass filter by using stubs.

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2/3

Advanced study of the Italian health insurance electronic card's security system (PIN + chip):

- Asymmetric and symmetric key management
- Certification Authorities and X.509 standard
- Public Key Infrastructure
- Remote cypher
- SSL/TLS protocol for web security

Computer skills

Basic	JAVA, LINUX, CST
Intermediate	CADENCE
Advanced	C/C++, VISUAL C++, MATLAB, L ^A T _E X, OPENCV library, ELECTRONIC WORKBENCH

Conferences

May/2013 - R.ANNUNZIATA, A. Garzelli and A.Mecocci, "**A Novel Unsupervised Approach for Automatic Retinal Blood Vessel Segmentation through Exudates Estimation, Eigenvalue Analysis and Regularization**", *11th ARVO/ISIE Imaging Conference in Seattle, Washington*.

Languages

Italian	Mother tongue
English	Fluent - IELTS - C1 level - 7.0/9.0

Interests

- New Technologies
- Sport
- Philosophy
- Economics
- Chess
- and everything is unknown to me