Output of the Retinacheck Project

PhD theses at TU/e (prof. B.M. ter Haar Romeny, promotor):

A. Erik J. Bekkers: Retinal Image Analysis using Sub-Riemannian Geometry in SE(2).PhD thesis Eindhoven University of Technology.
7 journal papers, 11 conference papers, PhD thesis 'Cum Laude'. Date: 23-01-2017.URL:
https://pure.tue.nl/ws/files/52750592/20170123_Bekkers.pdf.

B. Jiong Zhang: Multi-orientation analysis of retinal images for computer-aided diagnosis. PhD thesisEindhoven University of Technology.
10 journal papers, 8 conference papers, 4 abstracts. Date: 29-03-2017.URL:
https://research.tue.nl/files/59038942/20170329_Zhang.pdf.

C. Samaneh Abbasi-Sureshjani: Contextual and deep learning approaches for retinal image analysis.PhD thesis Eindhoven University of Technology.
18 journal and conference papers. Date: 4-12-2017.
URL: https://pure.tue.nl/ws/files/87366385/20171204_Abbasi_Sureshjani.pdf.

D. Fan Huang: Analysis of vascular biomarkers on retinal images for early eye disease detection. PhDthesis Eindhoven University of Technology.
9 journal papers, 9 conference papers. Date: 12-09-2018.
URL: https://research.tue.nl/files/105419946/20180912_Huang.pdf.

Scientific publications RetinaCheck

[1] S. Abbasi-Sureshjani, B. Dashtbozorg, B. M. ter Haar Romeny, and F. Fleuret. Boosted exudate segmentation in retinal images using residual nets. In Proc. Ophthalmic Medical Image Analysis OMIA 2017, at MICCAI 2017, Québec City, Canada, pages 210–218. Springer, Cham, 2017. DOI:10.1007/978-3-319-67561-9-24.

[2] S. Abbasi-Sureshjani, B. Dashtbozorg, B. M. ter Haar Romeny, and F. Fleuret. Exploratory study on direct prediction of diabetes using deep residual networks. In Proc. VipIMAGE 2017, Lecture Notes inComputational Vision and Biomechanics LNCVB, [3] volume 27, pages 797–802. Springer, Cham, 2017. DOI:10.1007/978-3-319-68195-5-86.

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[4] S. Abbasi-Sureshjani, M. Favali, G. Citti, A. Sarti, and B.M. ter Haar Romeny. Curvature integrationin a 5D kernel for extracting vessel connections in retinal images. IEEE Transactions on Image Processing, 27(2):606–621, October 2017.

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[6] S. Abbasi-Sureshjani, I. Smit-Ockeloen, J. Zhang, and B. M. ter Haar Romeny. Biologically-inspiredsupervised vasculature segmentation in SLO retinal fundus images. In Mohamed Kamel and AurélioCampilho, editors, Image Analysis and Recognition, volume 9164 of Lecture Notes in Computer Science, pages 325–334. Springer, 2015. DOI: 10.1007/978- 3-319-20801-5-35.

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Patent

[P1] B.M. ter Haar Romeny and S. Abbasi-Sureshjani. Object recognition using a convolutional neuralnetwork trained by principal component analysis and repeated spectral clustering. Technische Universiteit Eindhoven. Patent Appl. No. 15/822982. Filed 11/27/2017.

Student reports: RetinaCheckMSc theses at TU/e:

[s1]May Wong: Longitudinal diabetic damage effects on retinal vessel physiology
[s2]JingHan Feng: Automated Quality Assessment Eligibility for Retinal Fundus Images
[s3]Erik J. Bekkers: A new retinal vessel tracking method based on invertible orientation scores
[s4]Koen A. J. Eppenhof: Supervised artery/vein classification in retinal images via local and contextual feature analysis
[s5]Fan Huang: Multi-parameter classification of diabetic retinopathy
[s6]Frank C. Martin: Improving the reproducibility of the Cassini's astigmatism axes by iris registration
[s7]Joke Manders: Development and validation of a diagnostic tool to grade visual impairment
[s8]Iris Ockeloen: Bifurcation detection in retinal images
[s9]Christiaan Peppenster: RetinaCheck Server in Python
[s10] Rick Philipsen: Retinal vascular fractal dimension

[s11] Steven Roodhorst: Clinical retinal image analysis
[s12] Mark van Grinsven: Automatic tracking and segmentation of vascular trees
[s13] Rozemarijn Weijers: Preceyes: retina microsurgery robot
[s14] Christiaan Weststrate: Why cones in the retina have a cone shape: super-resolution
[s15] Frank Martin: Semi-automated Retinal Centerline Extraction via the Application of Dijkstra'sAlgorithm in Orientation Scores
[s16] Gilian M. L. Pluijmen (HsZuyd): Analyse van de retinale vasculatuur: Valideren van de camerakwaliteit op basis van de analyse over de reproduceerbaarheid van geautomatiseerde beeldanalyse methoden

MSc theses in Shenyang (NEU):

[s17] Shanshan Zhu: Validation of quantitative retinal vessel curvature measurements with clinicaldiabetic metadata
[s18] Song Liang: Remote Retinal Screening System Based on Centralized Massively Parallel Calculation
[s19] Shuong Guo: Quality check and analysis of diabetic retinopathy
[s20] Li Bo: Automatic detection of neovascularization based on color retinal image
[s21] Cuicui Wang: Automated quality assessment of color fundus images
[s22] Dongxue Chen: The detection of retinal microbleeds based on COSFIRE filters
[s23] Wu Hao: High precision fovea localization
[s24] He Huang: Automatic detection of neovascularization in retinal images
[s25] Sunyi Zheng: Benchmark for CUDA parallel processing of retinal images
[s26] Han van Triest: RTPTools, a software package for annotation of retinal images
[s27] Han van Triest: Retinal Image Analysis Tool

Dutch externships in Shenyang, China:

[s26] Tom Lamers: RetinaCheck Shengjing Study: Implementation of relating retinal vessel tortuosityto diabetic metadata
[s27] Mieke van Triest: RetinaCheck Shengjing Study: Retinal vascular tortuosity and the associationswith diabetes related factors in type 2 diabetes
[s28] Meghna Hukeri: RetinaCheck Shengjing Study: Quality Analysis of Retina Images
[s29] Patrick Brand: RetinaCheck Shengjing Study: Parallelizing Software for RetinaCheck – Orientation Score curvature
[s30] Sophie Taverne: RetinaCheck Shengjing Study: Validation of quantitative retinal vessel curvature

measurements with clinical diabetic metadata

Internships at TU/e:

[s31] Huub Hovens: Super-resolution using cone-shaped detectors
[s32] Stefan Marien: Local vessel curvature calculation and analysis in retinal images [s33] Jinghan Feng: Automated quality assessment eligibility for retinal fundus images[s34] Yidan Guo: Microbleeds detection
[s35] Adriaan Versteeg: Automated angle measurements in bifurcations
[s36] Mihaela Giurgia: Validation of micro-aneurysm detection in color fundus images
[s37] Anamaria-Carla Vass: Retinal vasculature analysis: Quantifying the tortuosity in the retinalarteries and veins separately
[s38] Estera-Ana Zarnescu: Assesment of bifurcation features in retinal images[s39] Xihe Kuang: Validation of retinal vessel width
[s40] Paul Bloembergen: The automatic classification between arteries and veins in fundus images[s41] Renée Koolschijn: Software-based image analysis in ophthalmology
[s42] Etienne Mees: Retinal vasculature tortuosity analysis in diabetes and controls
[s43] Rob J.J. Wijers: Retinal vasculature analysis in type 2 diabetes mellitus patients: Determiningthe fractal dimension
[s44] Alexander Yeung: Analyse van de bloedvaten in het oog: betrouwbaarheid en validiteit van Ivan,
Vampire en RHINO-software
[s45] Andrea T.M. Vader: Onderzoeksverslag Kwantificeren van funduscamera's
[s46] Guilherme Baptiste de Moura: Retinal Image Analysis Tool: a graphical user interface
[s47] Mihaela Giurgia: Retinal vasculature analysis: Assessment of width-based biomarkers and fractaldimension of the retinal vascular tree
[s48] Joshua Heuschen: Analyse van de retinale vasculatuur: Kan dit automatisch geanalyseerdworden door programmatuur?
[s49] Sophie Janssen: The effect of diabetes on the retinal vascular caliber and tortuosity: a pilot studyfor the Retinal Image Analysis Tool

Bachelor End Projects at TU/e and Maastricht University:

[s50] Yves Vijgeboom: Diabetic retinopathy detection
[s51] Mike van Zon: Detecting diabetic retinopathy in retinal images using deep neural networks [s52] Rob Weijers: Retinal vasculature analysis in type 2 diabetes mellitus patients: Determining the fractal dimension
[s53] Tom Nijhof: Fractal dimension analysis of retinal images using vessel probability maps[s54] Julius Hannink: Retinal vascular tree classification
[s55] Rick Philipsen: Fractal dimensions of retinal images

[s56] Frank Martin: Semi-automated retinal vessel contour extraction by the Dijkstra Algorithm[s57] Niels Drost and Luc Bakker: Retinal image deformation and registration analysis
[s58] Etienne Mees: Retinal vasculature analysis in diabetes and controls: Quantifying the tortuosity inthe retinal vascular tree
[s59] Ryan G. G. Sambo: Novel tools for measuring vertical cup-to-disc ratio and retinal vascular caliber parameters for evaluation of glaucoma. A pilot study for the RetinaCheck Annotation Platformand the Vessel Annotation Tool
[s60] Martin Stelten (HZuyd): cEYEcle: Reproduceerbaarheid tortuosity