

Curriculum Vitae of Remco Duits

Personal Data

Name: R.Duits (Remco)
 Birth Date & Place: 26-05-1978, Weert, The Netherlands
 Nationality: Dutch
 Partner: Tamara Nijsen, 18-01-1979,
 Children: Kyra Duits (daughter) 08-07-2011 & Tom Duits (son) 29-01-2013.

Affiliation

Dr.ir. R.Duits
 Eindhoven University of Technology (TU/e)
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Educational Background

1996–2001: Eindhoven University of Technology, Department of Mathematics and Computer Science.
 Master degree in Applied Mathematics (5 year study) August 2001. Industrial master project on the application of matrix groups in geodesy, <http://alexandria.tue.nl/repository/books/716743.pdf>, rewarded with maximum grade of 10. Master thesis (**Honors: cum laude**) on a new functional analytical approach to the Stokes boundary value problem, <http://alexandria.tue.nl/extra2/afstversl/wsk-i/duits2001.pdf>

Research Experience and Former Affiliations

01-09-2001–01-09-2005: **PhD** degree in biomedical engineering at Eindhoven University of Technology. PhD thesis: “Perceptual Organization in Image Analysis: a Mathematical Approach based on Scale, Orientation and Curvature”, www.win.tue.nl/~rduits/THESISRDUITS.pdf.

Honors: cum laude (best thesis of the biomedical engineering dep. in 2005, nominated for the ASML promotion prize of best PhD thesis at TU/e, i.e. among 2% best, in 2005)

01-09-2005–01-04-2006: **Postdoc** at the biomedical engineering department within the biomedical image analysis (BMI/a) group of Prof. Bart ter Haar Romeny at TU/e.

01-04-2006–01-08-2015: **Assistant Professor** (UD), fixed-term position,

01-08-2015– Now: **Associate Professor** (UHD), fixed-term position, both within the Center for Analysis, Scientific Computing and Applications (CASA, www.win.tue.nl/casa) headed by Prof. Mark Peletier, Prof. Barry Koren and Prof. Luc Florack at the Department of Mathematics and Computer Science at the TU/e. Within this position R.Duits was up to 2019 affiliated part-time (0.1-0.3 fte) to the biomedical engineering department. In 2021 R.Duits was a driving force in the Applied Differential Geometry cluster. He is now part of CASA.

05-03-2019–05-04-2019: **Visiting Professor** Sorbonne Univ. Paris – Institute Henri Poincaré Paris.

Long-term visits to excellent international research institutes abroad include:

- October, 2002: Collaborative visit to Prof. Stephen Pizer, Dep. of Computer Science, and Prof. James Damon, Dep. of Mathematics, University of North Carolina Chapel Hill, USA.
- November, 2004: Collaborative visit to Prof. Michael Felsberg, Computer Vision Laboratory, Linköping University, Linköping, Sweden.
- March & April, 2006: Collaborative visit to Prof. David Mumford (fields medal winner), Brown University, Div. Applied Mathematics, USA, to discuss my solutions to his problem in his paper *elastica and computer vision* generating QAM-AMS publications on exact solutions of left-invariant PDE's on $SE(2)$. Meanwhile we extended all our solutions of the linear left-invariant PDE's to the case $SE(3)$.
- June 2007: Collaborative visit to Prof. Joachim Weickert, and Dr. Bernard Burgeth, Mathematical Image Analysis group of Saarland University, Germany, to discuss novel crossing preserving nonlinear diffusions.

- March 2008: Collaborative visit to Prof. Michael Felsberg, Computer Vision Laboratory, to collaborate on orientation scores in imaging and orientation channels in robotics. Linköping University, Sweden.
- April, May, June 2008, March 2009: Collaborative visit to Prof. Harmut Führ, Lehrstuhl für die Mathematik A, RWTH Aachen, Germany, for collaborations regarding left-invariant evolutions on Gabor transforms, yielding a publication in ACHA.
- April 2012, collaborative visit to Prof. U. Boscaïn and S. Mallat, Ecole Polytechnique Paris, CMAP, France, generating two joint publications in JMIV and ESAIM Control and Optimization.
- May 2013, collaborative visit to dr. A. Sarti and dr. G. Citti, CAMS EHESS, France, for joint collaborations on EU-Marie Curie project MANET (ag.no. 607643).

Teaching Experience and Supervision

- responsible teacher of TU/e math course *Applied Functional Analysis (2WA08)* yearly 2006–2014.
- resp. teacher of TU/e course *Mathematical Modeling in Physiology (2DX00)* yearly 2006–2014, 2019.
- responsible teacher of TU/e math course *Wiskunde II (2DM60)* for biomedical engineering, 2013.
- teacher of TU/e calculus and (image) analysis courses (2DM00, 2WBB0, 8G116, 2Y060), 2006–2013.
- tutor at many design-based learning projects at TU/e, 2001–2006, and instructor *Analysis 2 (2WA40)* 2019.
- teacher of *Orientation Score Theory and its Solutions to Cortical PDE, ODE and Wavelet Models* in international summer school involving several universities from Italy, France, Russia, Netherlands and Finland, see www.win.tue.nl/~rduits/cort.pdf, Italy 2017.
- responsible teacher of TU/e course *Complex Analysis (2WA80)*, 2019–2021.
- responsible teacher and designer of TU/e course *Differential Geometry for Image Processing*, 2018–2021, receiving Award ‘Excellent Course Evaluation’ in 2021, www.win.tue.nl/~rduits/Award2MMA70.pdf.

BKO certificate on didactic skills obtained in 2012 at dep. of Mathematics and Computer Science TU/e.

Certificate on Academic Leadership obtained in 2017 at TU/e. I have successfully supervised:

- 7 PhD projects (Erik Franken & Erik Bekkers & Bart Janssen & Jiong Zhang & Alessandro Becciu & Stephan Meesters & Jorg Portegies) of which 2 were cum laude ($\leq 5\%$ best) and 3 nominated (Bekkers, Franken, Janssen) as best of the departments (W&I and BME) for prize yearly best TU/e PhD thesis. The most recent PhD thesis is by Jorg Portegies: www.win.tue.nl/~rduits/Jorg.pdf
- 17 master projects, of which 9 were rewarded cum laude, and 7 trainingship image analysis projects.

and 4 post-doc projects (Sanguinetti & Mashtakov & Bekkers & Portegies).

Other Professional Activities

- Main organizing committee member of the innovated yearly math congress ‘Nieuw Mathematisch Congress’ by the Royal Dutch Mathematics Association (KWG) 2018.
<https://www.wiskgenoot.nl/index.php?page=37&sid=2>
- Organizer of EMaCs.Eindhoven Mathematics Colloquiums at the TU/e during 2010–2013.
- Member of the Institute For Diagnostic and Interventional Imaging (IMDI-IDII) within Innovative medical Devices Initiative: active collaborations with Epilepsy Institute Kempenhaeghe and Utrecht University (with P. Ossenkop & A. Lemans).
- Member of the national Advanced School for Computing and Imaging (ASCI), active collaborations and joint projects with TU-Delft (with dr. M. Loog & dr. A. Vilanova).
- 3TU AMI TU/e-Health coordination August 2013–April 2014 and co-organizer of joint-research day for collaborations between Dutch universities of technology on theme health.
- Organizer of 4TU-AMI Annual Congress called “*The Mathematics of Deep Learning*” in TU-Delft 2019.
<https://www.4tu.nl/ami/en/Agenda-Events/>
- Guidance image analysis projects Study Group Weeks Industrial Mathematics (e.g. *Imaging Recognition of Shape Defects in Hot Steel Rolling for Tata-steel* in SWI 2012).
- Industrial collaborations via joint projects with *I-optics* (with T. van Elzakker), with *General Electrics* (with T. Tan), with *Inviso b.v.* (with dr. F. Kanters), *Philips Healthcare* (with Prof. M. Breeuwer), *Philips Image Guided Therapy Systems* (with dr. J. Olivan Bescos).

- organizer and chair on three international workshops held at Eurandom TU/e (www.eurandom.tue.nl/). These workshops are intended for both mathematicians (probability theory, harmonic analysis and statistics) and mathematically inclined engineers (statistics and imaging):
 - Dec.11-13,2006 : *Image Analysis and Inverse Problems* organized by Laurie Davies, Remco Duits and Marie-Colette van Lieshout.
 - Sept.24-26,2007 : *Algorithms in Complex Systems* organized by Laurie Davies, Remco Duits, Geurt Jongbloed and Marie-Colette van Lieshout.
 - Nov.24-26,2008 : *Locally Adaptive Filters in Signal and Image Processing* organized by Laurie Davies, Remco Duits, Luc Florack, Geurt Jongbloed and Marie-Colette van Lieshout.
- Committee member of several programme committees, e.g. of the international conferences on scale space and variational methods 2007, 2009, 2011, 2013 and Dagstuhl seminar 11501 in 2012.
- Main organizer of workshop “*Image Analysis and Control Theory*” in august 2011 at the TU/e to bridge the fields of geometric control theory and image analysis.
- Main organizer of large workshop “*Geometry, PDEs and Lie Groups in Image Analysis*”, august 2016. www.win.tue.nl/~rduits/workshop/index.html
- Main editor in editorial board for JMIV since 1-1-2016.
- Organising main editor special issue (JMIV 2017) ‘Differential Geometry & Orientation Analysis for Image Processing’
- Regular scientific reviewing for journals such as JMIV, IJCV, PAMI, *Journal of Physiology*, SIAM Journal on Imaging Science, and IEEE-journal *TMI* etc.
- Program committee member and scientific reviewer of several conference proceedings and related books, e.g. the proceedings of the conference on scale space and variational methods (2005–2017), Eurandom workshops, Vis2010, CDMRI, Dagstuhl seminars, GSI-2017, etc.
- Scientific reviewer of many research proposals in the Netherlands (NWO), EU (ERC), France (ANR).
- Committee member of 12 PhD and 25 MsC projects.
- Rapporteur of PhD Laurent Sifre (invited by Prof. Stephane Mallat) EP-CMAP Paris, rapporteur of PhD Chen Da (invited by Prof.L.Cohen) Paris Dauphine, rapporteur of PhD Emre Baspinar and Noemi Montobbio UNIBO Bologna (Prof. Giovanna Citti), and of PhD M.Schmidt Saarland University (Prof. J.Weickert).
- Member of the Institute For Diagnostic and Interventional Imaging (IMDI-IDII) with joint publications with Epilepsy Institute Kempenhaeghe b.v. Member of ASCI school with active collaborations (dr. M. Loog & dr. A. Vilanova).
- 3TU AMI TU/e-Health coordination August 2013–April 2014 and co-organizer of joint-research day for cross collaborations between Dutch technical universities on theme health (medical imaging).
- Industrial collaborations via joint projects with *I-optics* (with T. van Elzakker) *Inviso b.v.* (with dr. F. Kanters), *Philips Healthcare* (with Prof. M. Breeuwer), *Philips X-ray Interventions* (with dr. J. Oliván Bescos).
- Coordinator of the Research Evaluation Report (2015–2020) for the full TU/e math department.
- For an overview of invited presentations see www.win.tue.nl/~rduits/presentations.pdf

Funding ID

Involved as main applicant in the approved research grants :

- Dutch Foundation of Scientific Research NWO 2021-2025 NWO-VICI (personal grant 1.5 Million Euro). Title: **GeoLearn**. Full title: *Geometric Learning for Image Analysis*.
- European Research Council 2013-2018 ERC-Stg (personal grant 1.3 Million Euro). Title: **Lie Analysis**, (no. 335555). Full title: *Lie Group Analysis for Medical Image Processing*.
- PhD-TA Project 2019-2024 TU/e: *Geometric Image Processing and PDE-based Equivariant Deep Learning on the Roto-Translation Group*.
- EU-Marie Curie (FP7-PEOPLE-2013-ITN) 2014-2018, Title: **MANET** (no. 607643). Full Title: *Metric Analysis and Emerging Technologies*.

Involved as collaborative partner in NWO-TTW *Diffusion MRI Tractography with Uncertainty Propagation for the Neurosurgical Workflow*, and as official co-applicant in: *Image Science and Technology Eindhoven* (IST/e) as a High Potential Program at the TU/e, and in EU-Marie Curie project FIRST (ag.no. PITN-GA-2009-238702).

Publications

Type of Publication	#
peer-reviewed international journals	43
peer-reviewed conferences proceedings	48
abstracts with code release	2
special issue int. journal	1
lecture notes	1
book chapters	5
books	2

All publications contain novelties both on the theoretical as on the application side. Close multi-disciplinary collaborations helped me to bring novel mathematical theory to medical imaging applications.

For a categorization of the publications see www.win.tue.nl/~rduits.

For the complete list of **102** publications ([**RD 1**],...,[**RD 102**]) see:

www.win.tue.nl/~rduits/completelist.pdf

Number of citations: **2851**, h-index: **29**, i-10 index: **60**, according to *Google scholar*.

The **43** Journal publications take place in two different types of journals:

- International Mathematical Journals, e.g. *Quarterly of Applied Mathematics*, A.M.S. (4 times) and *Applied Computational Harmonic Analysis* (ACHA) (2 times), *Differential Geometry and Applications* (DGA), *Journal of Mathematical Imaging and Vision* (JMIV) (7 times), *Doklady Mathematics*, *Numerical Methods: Theory and Applications* (2 times), *ESAIM: Control, Optimisation & Calculus of Variations*, *Journal of Dynamical Control Systems* (JDCS).
- International Image analysis journals: e.g. *International Journal of Computer Vision* (IJCV) (6 times), *SIAM Journal on Imaging Sciences* (SIAM-SIIMS), *Biological Cybernetics*, *Journal of Neuroscience Methods*, *Trans. on Medical Imaging* (IEEE-TMI) and *Pattern Rec. & Mach. Intell.* (IEEE-PAMI).

and are either induced by personal invitation via best paper selections at conferences (e.g. Early Cognitive Vision 2005, PRIA 2004, Scale Space and Variational Methods, 2003, 2005, 2007, 2009, 2011, 2013, 2017) or via international visits (e.g. to Prof. David Mumford, USA, Prof. Hartmut Führ, Germany). In general they have multiple theorems with proofs.

The **48** conference articles have been reviewed (double-blindly) by at least 3 reviewers, with low passing rates.

They include 9 *selected best papers* [**RD 26, RD 39, RD 40, RD 42, RD 45, RD 46, RD 51, RD 86, RD 96**]

and 5 *best paper awards* [**RD 28, RD 34, RD 41, RD 58, RD 93**]. Book (chapters) relate to international workshops.

Selection Peer-reviewed Journal Publications:

[**RD 2**] R. Duits and M. van Almsick, “The explicit solutions of linear left-invariant second order stochastic evolution equations on the 2d-Euclidean motion group,” *Quarterly of Applied Mathematics*, *American Mathematical Society*, vol. 66, pp. 27–67, April 2008.

[**RD 3**] R. Duits and E. M. Franken, “Left invariant parabolic evolution equations on $SE(2)$ and contour enhancement via invertible orientation scores, part I: Linear left-invariant diffusion equations on $SE(2)$,” *Quarterly of Applied mathematics*, *AMS*, vol. 68, pp. 255–292, June 2010.

[**RD 4**] R. Duits and E. Franken, “Left invariant parabolic evolution equations on $SE(2)$ and contour enhancement via invertible orientation scores, part II: Nonlinear left-invariant diffusion equations on invertible orientation scores,” *Quarterly of Applied mathematics*, *AMS*, vol. 68, pp. 293–331, June 2010.

[**RD 1**] R. Duits, L. M. J. Florack, J. de Graaf, and B. M. ter Haar Romeny, “On the axioms of scale space theory,” *Journal of Mathematical Imaging and Vision*, vol. 20, pp. 267–298, 2004.

[**RD 5**] R. Duits, M. Felsberg, G. Granlund, and B. M. ter Haar Romeny, “Image analysis and reconstruction using a wavelet transform constructed from a reducible representation of the Euclidean motion group,” *International Journal of Computer Vision*, vol. 79, no. 1, pp. 79–102, 2007.

- [RD 8] R. Duits and E. M. Franken, “Left-invariant diffusions on the space of positions and orientations and their application to crossing-preserving smoothing of HARDI images.,” *International Journal of Computer Vision* vol. 92, pp. 231–264, March 2011.
- [RD 11] E. M. Franken and R. Duits, “Crossing preserving coherence-enhancing diffusion on invertible orientation scores,” *International Journal of Computer Vision*, vol. 85, no. 3, pp. 253–278, 2009.
- [RD 13] R. Duits, H. Führ, B.J. Janssen, M. Bruurmijn, L.M.J. Florack and H.A.C.van Assen, “Evolution Equations on Gabor Transforms and their Applications”, *ACHA*, pp. 483–526, november 2013.
- [RD 17] R.Duits, T.C.J.Dela Haije, E.J. Creusen and A.Ghosh, “Morphological and Linear Scale Spaces for Fiber Enhancement in DW-MRI”, *JMIV*, vol(46), pp.326-368, 2013.
- [RD 18] U. Boscain, R. Duits, F. Rossi and Y. Sachkov, “Curve Cuspless Reconstruction via sub-Riemannian Geometry” *ESAIM-COCV Control Optimization and Calculus of Variations.*, vol. 20, pp.748–770, 2014.
- [RD 19] E.J. Bekkers, R. Duits, T. Berendschot, B.M. ter Haar Romeny, “A Multi-Orientation Analysis Approach to Retinal Vessel Tracking.,” *Journal of Math. Imaging and Vision*, vol. 49, no. 3 pp. 583–610, 2014.
- [RD 20] R.Duits, U.Boscain, F.Rossi and Y.Sachkov, “Association Fields via Cuspless Sub-Riemannian Geodesics in $SE(2)$.” *JMIV*, Published online (open access) Dec. 2013. Vol. 49 (2), pp. 384-417, 2014.
- [RD 24] J.Portegies, R.Fick, G.R.Sanguinetti, S.P.L.Meesters, G.Girard and R.Duits. “Improving Fiber Alignment in HARDI by Combining Contextual PDE flow with Constrained Spherical Deconvolution.” *PLOS ONE* 10(10): e0138122, p.1-32, 2015. <https://doi.org/10.1371/journal.pone.0138122>
- [RD 23] J. Zhang & R. Duits, G.R. Sanguinetti, B.M.ter Haar Romeny. “On Numerical Approaches for Linear Left-invariant Diffusions on $SE(2)$, their Comparison to Exact Solutions, and their Applications in Retinal Imaging.” vol. 9, p.1-50, 2016.
- [RD 25] E.J. Bekkers & R.Duits and A.Mashtakov* and G.R.Sanguinetti. “A PDE Approach to Data-Driven Sub-Riemannian Geodesics” *SIAM Journal on Imaging Sciences (SIIMS)*, vol 8, (4), p.2740–2770, 2015.
- [RD 87] J.M. Portegies and R. Duits. *New Exact and Numerical Solutions of the (Convection-)Diffusion Kernels on $SE(3)$* . Differential Geometry and Applications, (53), p.182-219, 2017.
- [RD 81] R. Duits, A. Ghosh, T.C.J. Dela Haije and A. Mashtakov. “On sub-Riemannian Geodesics within $SE(3)/(\{0\} \times SO(2))$ whose spatial projections do not have cusps.” *JDCS*, 22(4), p.771–805, 2016.
- [RD 88] R. Duits & S.P.L.Meesters & J.M.Mirebeau & J.M.Portegies. “Optimal Paths for Variants of the 2D and 3D Reeds-Shepp Car with Applications in Image Analysis.” *Journal of Mathematical Imaging and Vision*. July, 60(6), p.816–848, July 2018. <https://link.springer.com/article/10.1007/s10851-018-0795-z>.
- [RD 97] R.Duits, E.J.Bekkers and A.Mashtakov. “Fourier Transform on the Homogeneous Space of 3D Positions and Orientations for Exact Solutions to PDEs” *Entropy* 21 (1), 1–38. 8 January 2019. (Special Issue Joseph Fourier 250th Birthday: Modern Fourier Analysis and Fourier Heat Equation in Information Sciences for the XXIst century) www.win.tue.nl/~rduits/FTentropy.pdf

Selection Peer reviewed proceedings/conference publications:

- [RD 27] R. Duits, T. C. J. Dela Haije, A. Ghosh, E. J. Creusen, A. Vilanova, and B. ter Haar Romeny, “Enhancement of DW-MRI,” in *Scale Space and Variational Methods in Computer Vision (Lecture Notes in Computer Science)*, vol. 6667, pp. 1–13, September 2011.
- [RD 28] R. Duits and B. Burgeth, “Scale spaces on Lie groups,” in *Scale Space and Variational methods* (M. Sgallari and Paragios, eds.), (Ischia, Italy), pp. 300–312, 2007.
- [RD 93] E.J.Bekkers, M.Lafarge, M.Veta, K.Eppenhof, J.Pluim and R. Duits,. *Roto-translation covariant convolutional networks for medical image analysis* Springer, LNCS. 11070, in proc. MICCAI 2018, p.440-452, 2018. Awarded both at MIDL 2018 (Amsterdam) and MICCAI 2018 (Granada). https://link.springer.com/chapter/10.1007/978-3-030-00928-1_50
- [RD 95] J.M.Portegies, S.P.L.Meesters and P.Ossenblok, L.M.J.Florack and R. Duits. *Brain Connectivity Measures via Direct Sub-Finslerian Front Propagation on the 5D Sphere Bundle of Positions and Directions*. LNCS Proceedings Workshop CD-MRI MICCAI, p.309–321, 2019. <https://www.win.tue.nl/~rduits/brainconnectivity-Final.pdf>
- [RD 97] R.Duits, E. St Onge, J.W.Portegies and B.M.N.Smets. Total Variation and Mean Curvature PDEs on the Space of Positions and Orientations. LNCS 11603, pp.211–223, 2019. https://link.springer.com/chapter/10.1007%2F978-3-030-22368-7_17

Selection Books and book chapters:

[RD 71] L. M. J. Florack, R. Duits, G. Jongbloed, M.-C. van Lieshout, and L. Davies, *Mathematical Methods for Signal and Image Analysis and Representation*. Springer-Verlag, Berlin, 2012.

[RD 72] R. Duits, H. Führ, and B. Janssen, *Left Invariant Evolution Equations on Gabor Transforms*, chapter 8 in book [RD 70], pp. 151–172. Springer-Verlag, 2012.

[RD 75] R. Duits, A. Ghosh, T.C.J. Dela Haije, Y.L. Sachkov, *Cuspless Sub-Riemannian Geodesics within the Euclidean Motion Group $SE(d)$* , in *Neuromathematics of Vision*, Springer Series Lecture Notes in Morphogenesis, vol.1 p.173–240, 2014.

Invited Presentations and Awards

For my main invited international presentations, see: www.win.tue.nl/~rduits/presentations.pdf.

They include 50 invited talks/visits at prestigious institutes (e.g. Ecole Polytechnique & Henri Poincaré Inst. Paris, WIAS Berlin, Brown University USA, Helmholtz Zentrum München) and international conferences (such as SSVM: Scale Space and Variational Methods).

Awards:

(with cites to list of all 102 publications available at: www.win.tue.nl/~rduits/completelist.pdf)

- *Cum laude* reward and selected as best of the department for TU/e promotion prize (i.e. among the 2% best at TU/e) for PhD-thesis in 2005 [RD 52].
- *Cum laude* reward for Master thesis (supervised by Prof. J. de Graaf) on a new functional analytic approach to Stokes problems in 2001.
- Industrial master project in company *Geodelta* in Delft in 2001 on “Application of Orthogonal Matrix Groups in Geodesy”, was rewarded with maximum grade of 10.
- *Best Paper Award* on MMBIA workshop ICCV 2007 (Brasil) yielding invited submission [RD 11] to International Journal of Computer Vision (IJCV).
- *Best Paper Award* on Scale Space conf. (Scotland) 2003 yielding invited submission [RD 12] to IJCV.
- *Best Paper Award* on PRIA Conference 2006 (Russia) yielding invited submission to Image Processing, Analysis, Recognition and Understanding [RD 7].
- *Best PhD-thesis award* of the department Biomedical Engineering, TU/e, 2005. Nominated for best PhD-thesis award of all departments of TU/e (ASML-promotion prize), 2005.
- *Selected paper* on Scale Space and Variational Methods (SSVM) conf. 2007 (Italy) for invited submission [RD 10] to IJCV.
- *Selected paper* on Cognitive Vision Workshop (Scotland) 2005 for invited submission [RD 5] to IJCV.
- *Selected paper* on SSVM conf. 2009 (Norway) for invited submission, [RD 8], to IJCV.
- *Selected paper* on SSVM conf. 2011 (Israel) for invited submission [RD 17] to JMIV.
- *ISMIRM Merit Award* for [RD 55]
- *Best Poster Award* at ICTOpen 2015, presenting [RD 23].
- Copromotor and main supervisor of specially acknowledged PhD theses:
 - E. Franken (cum laude 2% best, selected as best of dep. for ASML prize) “Enhancement of Crossing Elongated Structures in Images”, <https://www.win.tue.nl/~rduits/PHD/DrF.pdf>.
 - B. J. Janssen (nominated for ASML-prize) on “Representation and Manipulation of Images Based on Linear Functionals”, <http://www.win.tue.nl/casa/research/casaprojects/janssen.html>.
 - E.J. Bekkers (cum laude $\leq 2\%$ best, selected as best of 2 departments: Dep. Math. & Comp. Science and Dep. of Biomedical Eng. for the TU/e promotion prize 2017) “Retinal Image Analysis using Sub-Riemannian Geometry in $SE(2)$ ”, <https://www.win.tue.nl/~rduits/PHD/Erik.pdf>
- *Selected Paper* [RD 87] for invited paper in Entropy Special Issue “in honor of Joseph Fourier’s 250th birthday ”, cf. [RD 97], 2018.
- *Selected paper* [RD 86] on SSVM 2017 (Denmark) for invited JMIV paper [RD 92].
- *Selected paper* [RD 96] on SSVM 2019 (Germany) for invited JMIV paper [RD 100] 2019.
- *Keynote speaker* at SSVM (Israel) 2011
- invited keynote speaker for top math congress ENSPM (Portugal) 2021.
- *Best Referee Award* at SSVM 2015.
- *Teaching Award Master Course Differential Geometry for Image Processing TU/e* 2021.
- *Philips Impact Award* for [RD 95] at MIDL (Amsterdam) 2018.
- Winner of 2 (top-ranked) personal grants: ERC-Stg 2014-2019 and VICI (NWO) 2021-2026.