Ata Chizari

Veni Postdoctoral Fellow,
Optics for Technology (OPT),
Department of Precision and Microsystems
Engineering (PME), Faculty of Mechanical Engineering (ME),
Delft University of Technology (TUD), Delft, The Netherlands.

ORCID, LinkedIn, Website
Google Scholar, Web of Science
TUD Research Portal, X
Email: a.chizari@tudelft.nl

Research interests

My work focuses on integrating optics, electronics, and ultrasound to develop portable medical devices that expand the capabilities of point-of-care diagnostic imaging and sensing. I aim to synergize models, hardware, and software to address biomedical challenges while enhancing robustness against environmental artifacts. With a Ph.D. in applied physics and graduate training in electrical engineering, I have designed photonics-based medical devices that prioritize knowledge-driven innovation, user-friendly operation, rapid data acquisition, and quantitative interpretation. Currently, my research emphasizes non-invasive, label-free in vivo optical flowmetry using laser speckle and Doppler techniques, as well as exploring high-resolution, deep-tissue imaging applications, such as optical coherence tomography angiography and endoscopy. My broader research interests include coherent optical imaging, dynamic light scattering, metamaterials, and microfluidics.

Employment

Veni Postdoctoral Fellow — Delft, The Netherlands
Optics for Technology Group — September 2025 – Present
Department of Precision and Microsystems Engineering
Faculty of Mechanical Engineering
Delft University of Technology
Advisor: Dr. Nandini Bhattacharya

Topic: Multimode wearable sensors for cardiovascular sensing

Postdoctoral researcher — Enschede, The Netherlands
Biomedical Photonic Imaging Group — May 2021 – April 2025
Technical Medical Centre
Faculty of Science and Technology
University of Twente
Advisor: Prof. dr. ir. Wiendelt Steenbergen

Topic: Noninvasive optical measurement of cardiovascular parameters
Industrial partner: Sonion Nederland B.V. — Jan. 2023- May. 2025

Topic: The Bath Mat: technology for early detection of diabetic foot ulcers in the home setting
Clinical partner: Dr.ir. Kilian Kappert — May. 2022- Dec. 2022

Topic: improving free flap transplantation with the use of handheld laser speckle perfusion imaging
Clinical partners: Hinne A. Rakhorst, PhD, MD
Danny J. Evers, PhD, MD
Johan G. Wijbenga, MD — May. 2021- May. 2022

Visiting research assistant — Tehran, Iran
Optical Networks Research Lab — Sep 2014 - Sep 2016
Faculty of Electrical Engineering
Sharif University of Technology
Advisor: Prof. Jawad A. Salehi

Education

Ph.D. in applied physics (biomedical optics) — Enschede, The Netherlands
(Graduation: October 14, 2021)
University of Twente — 2017 – 2021
Advisor: Prof. dr. ir. Wiendelt Steenbergen
Thesis: *Handheld laser speckle contrast perfusion imaging* (DOI | YouTube)

M.Sc. in electrical engineering (communication systems) — Tehran, Iran
University of Twente — 2013 – 2015
Advisor: Dr. Akbar Dargahi
Thesis: *Designing A Dimmable OPPM-Based VLC System Under Channel Constraints* (DOI)
GPA: 17.79/20.00 (3.81/4)

B.Sc. in electrical engineering (electronics) (*hons*) — Tafresh, Iran
Tafresh University — 2009 – 2013
Advisor: Dr. Ali M. Fotouhi
Thesis: *Design and Implementation of a Remote Control Switching Device for Electricity Keys with Capability of Easy Installation*
GPA: 18.72/20.00 (3.96/4)

Highlights

Update: May 2026

- Citations on Google Scholar: 1317, **h-index: 15**, i10-index: 16
- Journal articles: 15 (+1 in preparation) of which 10 as the (co)first author
- Verified peer reviews on Web of Science: 169
- Patents: 4 (+1 in-preparation)
- Conference papers: 16 of which 6 as the (co)first author and 2 as senior author
- Supervised students: 19 of which 7 master's and 1 PhD theses
- Teaching assistant: 20 of which 8 master's and 12 bachelor's courses

Honors and awards

[13] Selected for final interview, Research Associate Position, Vision Lab, University of Cambridge 2024

[12] Ranked 6th out of 140 preproposals, Veni Talent Programme (Applied and Engineering Sciences Domain), NWO 2024

[11] Wiley Top Cited Article 2022-2023 in Skin Research and Technology, link, DOI 2024

[10] Study protocol approved by the Ethics Committee and endorsed by the Dean for subject research in Natural Sciences and Engineering, faculty of Science and Technology (TNW), University of Twente 2023

[9] Recognition of Breast Clinic East-Netherlands (BON) at Collaborating Top Clinical Hospitals (STZ Topklinisch) and specific mention of wireless perfusion imager (WIPI) as an in-vivo validated innovation, link 2023

[8] Best Oral Communication Award in LALS, Nancy, France, link 2022

[7] IEEE/IET Student Travel Grant Award for 10th IEEE/IET CSNDSP 2016, Prague2016

[6] Ranked 3rd in class of Communication Systems Graduate Students of Shahid Beheshti University 2015

[5] Accepted as Talented Student for Graduate Studies at Shahid Beheshti University 2013

[4] Ranked 1st Among 120 Students in Class of 2009 Electrical Engineering Entrants 2013

[3] Ranked Top 1.6% (among 76,000) in the National Entrance Exam Among Electrical Engineering students of Iran for M.Sc. studies 2013

[2] Ranked Top 3.6% (among 369,393) in the Nationwide University Entrance Exam (KONKOOR) for B.Sc. Studies 2009

[1] Ranked 1st Among 150 Students in Class of 2004 Mathematics and Physics of Bahonar High School 2007

Research Grants

[6] (€320,000) VENI round 2024, "BEAT: Blood Pressure Evaluation through Optical and Acoustic Technology"Applied and Engineering Sciences Domain, NWO Talent Programme, Dutch Research Council. Host institution: Delft University of Technology, Mechanical Engineering Department link 2025

[5] (€80,000) Co-applicant in Twente University Radboudumc Opportunities (TURBO) grant, Real-time non-invasive perfusion imaging of the skin − accurate tissue assessment in the blink of an eye, link 2023

[4] (€50,000) Major contribution in the preparation of NWO Take-off phase 1: Handheld Perfusion Imager link 2023

[3] (€20,000) Major contribution in the preparation of Thematic Technology Transfer Medtech voucher, Handheld Perfusion Imaging link 2021

[2] (€60,000) Major contribution in the preparation of Pioneers in Health Care, Verbetering van vrije flap transplantaties met handheld laser-speckle perfustion imaging, link 2020

[1] (€300) IEEE/IET Student Travel Grant Award for 10th IEEE/IET CSNDSP 2016, Prague, Czech Republic 2016

Publications

Journal articles

[16] Micha de Bont, Ingemar Fredriksson, Wiendelt Steenbergen, Nandini Bhattacharya, and **Ata Chizari**, Multimode method for enhanced optical signal acquisition in wearable cardiovascular monitoring, *in preparation.*

[15] **Chizari, A.**, van der Hoek, J. L., Rook, A. R. D., Krommendijk, M. E., Snoeijink, T. J., Visser, A., Knop, T., Arens, J., Manohar, S., Steenbergen, W. and Groot Jebbink, E. (2025) 'Feasibility of Laser Speckle-Based Perfusion Imaging in an Ex-Vivo Liver Model', IEEE Journal of Translational Engineering in Health and Medicine, 13, pp. 437-449. https://doi.org/10.1109/JTEHM.2025.3602158

[14] **Chizari, A.**, Schaap MJ, Knop T, Seyger MMB, Steenbergen W. Mitigation of Motion Artifacts in Handheld Laser Speckle Contrast Imaging Illustrated on Psoriasis Lesions. IEEE Trans Biomed Eng. 2025 Jan;72(1):70-78. Epub 2025 Jan 15. PMID: 39102317. https://doi.org/10.1109/TBME.2024.3438375

[13] Rook, A.R.D.†, **Chizari, A.**†, Knop, T., Teunissen, S.E.M., Wijbenga, G.J., Evers, D.J., Steenbergen, W., and Rakhorst, H.A., 2025. Assessing DIEP flap perfusion using handheld wireless laser speckle contrast imaging: a proof of principle study. Journal of Plastic, Reconstructive & Aesthetic Surgery. †*Co-first author with equal contribution.* https://doi.org/10.1016/j.bjps.2025.04.035

[12] **Chizari, A.**, Tsong, W., Knop, T. and Steenbergen, W., 2023. Prediction of motion artifacts caused by translation in handheld laser speckle contrast imaging. Journal of biomedical optics, 28(4), pp.046005-046005. https://doi.org/10.1117/1.JBO.28.4.046005

[11] Schaap, M.J., **Chizari, A.**, Knop, T., Groenewoud, H.M., van Erp, P.E., de Jong, E.M., Steenbergen, W. and Seyger, M.M., 2021. Perfusion measured by laser speckle contrast

imaging as a predictor for expansion of psoriasis lesions. *Skin Research and Technology.* https://doi.org/10.1111/srt.13098

[10] Padmanaban†, P., **Chizari**†, A., Knop, T., Zhang, J., Trikalitis, V.D., Koopman, B., Steenbergen, W. and Rouwkema, J., 2021. Assessment of flow within developing chicken vasculature and biofabricated vascularized tissues using multimodal imaging techniques. *Scientific reports*, 11(1), pp.1-14. †*Co-first author with equal contribution.* https://doi.org/10.1038/s41598-021-97008-w

[9] **Chizari, A.**, Schaap, M.J., Knop, T., Boink, Y.E., Seyger, M. and Steenbergen, W., 2021. Handheld versus mounted laser speckle contrast perfusion imaging demonstrated in psoriasis lesions. *Scientific reports*, 11(1), pp.1-13. https://doi.org/10.1038/s41598-021-96218-6

[8] **Chizari, A.**, Knop, T., Tsong, W., Schwieters, S. and Steenbergen, W., 2021. Influence of wavefront types on movement artefacts in handheld laser speckle contrast perfusion imaging. *OSA Continuum*, 4(6), pp.1875-1888. https://doi.org/10.1364/OSAC.420479

[7] **Chizari, A.**, Knop, T., Sirmacek, B., van der Heijden, F. and Steenbergen, W., 2020. Exploration of movement artefacts in handheld laser speckle contrast perfusion imaging. *Biomedical Optics Express*, 11(5), pp.2352-2365. https://doi.org/10.1364/BOE.387252

[6] Jamali, M.V., Mirani, A., Parsay, A., Abolhassani, B., Nabavi, P., **Chizari, A.**, Khoramshahi, P., Abdollahramezani, S. and Salehi, J.A., 2018. Statistical studies of fading in underwater wireless optical channels in the presence of air bubble, temperature, and salinity random variations. *IEEE Transactions on Communications*, 66(10), pp.4706-4723. https://doi.org/10.1109/TCOMM.2018.2842212

[5] **Chizari, A.**, Jamali, M.V., Abdollahramezani, S., Salehi, J.A. and Dargahi, A., 2017. Visible light for communication, indoor positioning, and dimmable illumination: A system design based on overlapping pulse position modulation. *Optik*, 151, pp.110-122. https://doi.org/10.1016/j.ijleo.2017.08.003

[4] Abdollahramezani, S., **Chizari, A.**, Dorche, A.E., Jamali, M.V. and Salehi, J.A., 2017. Dielectric metasurfaces solve differential and integro-differential equations. *Optics letters*, 42(7), pp.1197-1200. https://doi.org/10.1364/OL.42.001197

[3] Jamali, M.V., **Chizari, A.**, and Salehi, J.A., 2017. Performance analysis of multi-hop underwater wireless optical communication systems. *IEEE Photon. Technol. Lett.*, 29(5), pp.462-465. https://doi.org/10.1109/LPT.2017.2657228

[2] Dorche, A.E., Abdollahramezani, S., **Chizari, A.**, and Khavasi, A., 2016. Broadband, polarization-insensitive, and wide-angle optical absorber based on fractal plasmonics. *IEEE Photonics Technology Letters*, 28(22), pp.2545-2548. https://doi.org/10.1109/LPT.2016.2605503

[1] **Chizari, A.**, Abdollahramezani, S., Jamali, M.V. and Salehi, J.A., 2016. Analog optical computing based on a dielectric meta-reflect array. *Optics letters*, 41(15), pp.3451-3454. https://doi.org/10.1364/OL.41.003451

Patents

https://patents.google.com/?inventor=Ata+Chizari

[5] Steenbergen, W., **Chizari, A.**, Knop, T., and Blom, J., "System for imaging blood perfusion of tissue using laser speckle, and system and method for correction of movement artefacts of said system." *in-preparations*

[4] Steenbergen, W., **Chizari, A.**, Knop, T., and Kappert, K.D.R., "An assembly and a method for determining a temperature distribution of a foot", filed at Netherlands Patent Office (P142473NL00), Filed: October 2023, published: April 2025 (WO2025073668), link 1 link 2

[3] Steenbergen, W., **Chizari, A.**, and Knop, T., Twente Universiteit, 2024. Handheld laser-based perfusion imaging apparatus and method of using said apparatus. U.S. Patent Application 18/272,993, link

[2] Salehi, J.A., Hosseinianfar, H., and **Chizari, A.**, 2018. Methods and systems for geometrical optics positioning using spatial color coded LEDs. U.S. Patent 9,939,275, link

[1] Fotouhi, A.M. and **Chizari, A.**, 2012"Remote Control Switching Device of Electricity Keys with Capability of Easy Installation", Iran Patent, registration number: 73930, link

Conference papers

(presenter is underlined)

[16] De Bont, M., Knop, T., Fredriksson, I., Steenbergen, W., Bhattacharya, N. and **Chizari, A.**, 2026, March. Methodology for enhanced optical signal acquisition in wearable cardiovascular monitoring: initial findings. In Dynamics and Fluctuations in Biomedical Photonics XXIII (Vol. 13850, pp. 90-93). SPIE. DOI

[15] Bangari, R., Knop, T., Steenbergen, W., Bhattacharya, N. and **Chizari, A.**, 2026, March. Influence of external contact pressure in reflection mode photoplethysmography: a multidimensional manufacturing approach. In Design and Quality for Biomedical Technologies XIX (Vol. 13840, pp. 51-55). SPIE. DOI

[14] Rook, A.R., **Chizari, A.**, Knop, T., Evers, D.J., Wijbenga, J.G., Rakhorst, H.A. and Steenbergen, W., 2025, June. Motion artifact suppression using speed detection in handheld Laser Speckle Contrast Imaging: first results in DIEP flap surgery. In European Conference on Biomedical Optics (pp. Tu4A-4). Optica Publishing Group. DOI

[13] Rook, A.R.†, **Chizari, A.**†, Knop, T., Evers, D.J., Rakhorst, H.A. and Steenbergen, W., 2024, March. Handheld wireless laser speckle contrast imaging (LSCI) during DIEP flap breast reconstruction: a pilot study. In Optical Diagnostics and Sensing XXIV: Toward Point-of-Care Diagnostics (Vol. 12850, pp. 69-73). SPIE. †*Co-first author with equal contribution.* DOI

[12] **Chizari, A.**, A., Schaap, M.J., Knop, T., Seyger, M.M. and Steenbergen, W., 2023, August. Speed detection to suppress motion artifacts (MA) in laser speckle contrast imaging (LSCI). In Optical Coherence Imaging Techniques and Imaging in Scattering Media V (Vol. 12632, pp. 116-121). SPIE. DOI

[11] **Chizari, A.**, Tsong, W., Knop, T. and Steenbergen, W., 2023, March. Modelling movement artefacts in handheld laser speckle contrast imaging. In Dynamics and Fluctuations in Biomedical Photonics XX (Vol. 12378, pp. 11-16). SPIE. *Keynote* DOI

[10] **Chizari, A.**, Tsong, W., Knop, T. and Steenbergen, W., 2022, March. Modeling movement artefacts in handheld laser speckle contrast perfusion imaging: influence of wavefront types. In Dynamics and Fluctuations in Biomedical Photonics XIX (Vol. 11959, pp. 25-31). SPIE. DOI

[9] **Chizari, A.**, Schaap, M.J., Knop, T., Seyger, M.M. and Steenbergen, W., 2022, March. Reliability of handheld laser speckle contrast perfusion imaging demonstrated in psoriasis lesions. In Photonics in Dermatology and Plastic Surgery 2022 (Vol. 11934, pp. 53-63). SPIE. DOI

[8] Hosseinianfar, H., **Chizari, A.**, and Salehi, J.A., 2019, January. GOPA: Geometrical Optics Positioning Algorithm. In 2019 IEEE International Conference on Consumer Electronics (ICCE) (pp. 1-6). IEEE. DOI

[7] Pouryousef, S., Rezaiee, M. and **Chizari, A.**, 2018, August. Let me Join Two Worlds! Analyzing the Integration of Web and Native Technologies in Hybrid Mobile Apps. In 2018 17th IEEE International Conference On Trust, Security And Privacy In Computing And Communications/12th IEEE International Conference On Big Data Science And Engineering (TrustCom/BigDataSE) (pp. 1814-1819). IEEE. DOI

[6] **Chizari, A.**, Jamali, M.V., AbdollahRamezani, S., Salehi, J.A. and Dargahi, A., 2016, July. Designing a dimmable OPPM-based VLC system under channel constraints. In Communication Systems, Networks and Digital Signal Processing (CSNDSP), 2016 10th International Symposium on (pp. 1-6). IEEE. DOI

[5] Olyaee, S., Nikoosohbat, A., Mohebzadeh-Bahabady, A. and **Chizari, A.**, 2016, July. Square-hexagonal nanostructured photonic crystal fiber at 1550 nm wavelength. In Communication Systems, Networks and Digital Signal Processing (CSNDSP), 2016 10th International Symposium on (pp. 1-4). IEEE. DOI

[4] Ghahremanirad, E., Olyaee, S. and **Chizari, A.**, 2016, July. Nano-plasmonic thin-film solar cell receiver in visible light communication. In Communication Systems, Networks and Digital Signal Processing (CSNDSP), 2016 10th International Symposium on (pp. 1-5). IEEE. DOI

[3] Lotfi-Rezaabad, A., Talebi, S. and **Chizari, A.**, 2016, July. Two quasi orthogonal space-time block codes with better performance and low complexity decoder. In Communication Systems, Networks and Digital Signal Processing (CSNDSP), 2016 10th International Symposium on (pp. 1-5). IEEE. DOI

[2] Fazelian, M., AbdollahRamezani, S., Bahrani, S., **Chizari, A.**, Jamali, M.V., Khorramshahi, P., Tashakori, A., Shahsavari, S. and Salehi, J.A., 2016, May. Mining data sequences based on spatially coded technique using spatial light modulator. In Communication and Information Theory (IWCIT), 2016 Iran Workshop on (pp. 1-6). IEEE. DOI

[1] Jamali, M.V., Khorramshahi, P., Tashakori, A., **Chizari, A.**, Shahsavari, S., AbdollahRamezani, S., Fazelian, M., Bahrani, S. and Salehi, J.A., 2016, May. Statistical distribution of intensity fluctuations for underwater wireless optical channels in the presence of air bubbles. In Communication and Information Theory (IWCIT), 2016 Iran Workshop on (pp. 1-6). IEEE. DOI

Lectures

[9] **Chizari, A.**, "Handheld laser speckle contrast perfusion imaging: From the lab to the clinic". Optics at Athinoula A. Martinos Center for Biomedical Imaging, Massachusetts General Hospital, **Harvard Medical School**, Jun., 2025.

[8] **Chizari, A.**, "Blood Pressure Evaluation through Optical and Acoustic Technology". Sandpit pitch, TechMed Research Day. University of Twente, Apr., 2025.

[7] **Chizari, A.**, "BEAT: Blood Pressure Evaluation through Optical and Acoustic Technology", Monthly Meetings on Applied Nanophotonics (ANP), University of Twente, Enschede, The Netherlands, Mar. 2025. link

[6] **Chizari, A.**, "Portable dynamic light scattering imaging: with a focus on phantom development". Bohndiek Lab, **University of Cambridge**, Dec., 2024.

[5] **Chizari, A.**, "Addressing motion artifacts in biomedical imaging and sensing". Sandpit pitch, TechMed Research Day. University of Twente, Jun., 2024.

[4] **Chizari, A.**, "Study of movement artefacts in handheld laser speckle contrast perfusion imaging", Monthly Meetings on Applied Nanophotonics (ANP), University of Twente, Enschede, The Netherlands, Dec. 2022. link

[3] **Chizari, A.**, Schaap, M.J., Knop, T., Boink, Y.E., Seyger, M. and Steenbergen, W., "Clinical handheld laser speckle contrast perfusion imaging", Imaging colloquium, University of Twente, Enschede, The Netherlands, Jun. 2020

[2] **Chizari, A.**, Knop, T., Sirmacek, B., van der Heijden, F. and Steenbergen, W., "An exploration of movement artefacts in handheld speckle contrast perfusion imaging", Imaging colloquium, University of Twente, Enschede, The Netherlands, Mar. 2019

[1] **Chizari, A.**, Knop., T., Steenbergen, W., "Laser Speckles and Microcirculatory Perfusion Imaging", Monthly Meetings on Advances in Nanophotonics (ANP), University of Twente, Enschede, The Netherlands, Oct. 2017 link

Oral conference presentations

[13] **Chizari, A.**, Van der Hoek, J.L., Rook, A.R.D., Krommendijk, M.E., Snoeijink, T.J., Visser, A, Knop, T., Arens, J., Manohar, S., Steenbergen, W., and Groot Jebbink, E., (2025) "Feasibility of laser speckle-based perfusion imaging in an ex-vivo liver model". *Photons and Ultrasound Symposium - Systems and Methodologies for Imaging*, University of Twente, Enschede, The Netherlands.

[12] Kaya, M., Knop, T., Steenbergen, W. and **Chizari, A.** (2025) "Multi-spectral optical transmission to investigate the origin of the photoplethysmography signal". *10th Dutch Bio-Medical Engineering Conference*, The Netherlands. Link 1, Link 2

[11] **Chizari, A.**, Schaap, M.J., Knop, T., Seyger, M.M.B. and Steenbergen, W. (2025) 'Towards reliable handheld optical microcirculatory blood flow Imaging'. *10th Dutch Bio-Medical Engineering Conference*, The Netherlands. Link 1, Link 2

[10] Zoetelief, E., Kappert, K.D.R., **Chizari, A.**, Steenbergen, W., Reichmann, B.L., "Exploratory patient study into a new prediction method (Bathmat) for the development of diabetic foot ulcers in a home setting". Oct., 2023, Regional symposium on mammography (Regionaal mamma symposium). Twente hospital group (ZGT).

[9] Rook, A.R.D., **Chizari, A.**, Knop, T., Rakhorst, H.A, Evers, D.J. and Steenbergen, W., "Handheld wireless laser speckle contrast imaging (LSCI) during DIEP flap breast reconstruction: a pilot study". Oct., 2023, Regional symposium on mammography (Regionaal mamma symposium). Twente hospital group (ZGT).

[8] Rook, A.R.D., **Chizari, A.**, Knop, T., Rakhorst, H.A, Evers, D.J. and Steenbergen, W., Handheld wireless laser speckle contrast imaging (LSCI) during DIEP flap breast reconstruction: a pilot study. Oct., 2023, ZGT science day (Wetenschapsdag). Twente hospital group (ZGT). link

[7] Rook, A.R.D., **Chizari, A.**, Knop, T., Rakhorst, H.A, Evers, D.J. and Steenbergen, W., Handheld wireless laser speckle contrast imaging (LSCI) during DIEP flap breast reconstruction: presentation of preliminary results. Jun., 2023, TechMed Research Day. University of Twente. link

[6] **Chizari, A.**, Wireless perfusion imaging to assist plastic surgeons during free flap breast reconstruction. The Dutch event in photonics, Sep., 2022, ASML, Veldhoven, The Netherlands. ***Invited*** link

[5] **Chizari, A.**, 2022, September. Addressing movement artefacts in handheld laser speckle contrast perfusion imaging. The 25th Congress of the International Commission for Optics (ICO), the 16th International Conference on Optics Within Life Sciences (OWLS), Dresden, Germany. ***Invited*** link

[4] **Chizari, A.**, "Wireless perfusion imaging to assist plastic surgeons during free flap breast reconstruction", Techmed research day, Enschede, The Netherlands, Jun. 2022. link

[3] **Chizari, A.**, Knop, T., Sirmacek, B., Van Der Heijden, F. and Steenbergen, W., 2022, March. Exploration of movement artefacts in a handheld laser speckle contrast imaging. 16th International conference on Laser Applications in Life Sciences (LALS) 2020, Nancy, France (maintained in 2022). ***Best oral communication***

[2] **Chizari, A.**, Knop, T., Sirmacek, B., Van Der Heijden, F. and Steenbergen, W., 2022, March. Movement artefacts in handheld laser speckle contrast imaging. 16th International conference on Laser Applications in Life Sciences (LALS) 2020, Nancy, France (maintained in 2022). ***Keynote***

[1] Padmanaban, P., **Chizari, A.**, Steenbergen, W. and Rouwkema, J., 2019, May. Modification of mechanical environment to control vascular organization within developing chicken embryo. In TERMIS European Chapter Meeting 2019: Tissue Engineering Therapies: From Concept to Clinical Translation & Commercialisation. link

Posters

[5] Van der Hoek, J.L., Krommendijk, M.E., Snoeijink, T.J., **Chizari, A.**, Rook, A.R.D., De Bree, K.D.E., Greve, J.G.M., Liefers, H.R., Steenbergen, W., Versluis, M., Arens, J., Manohar, S. and Groot Jebbink, E. (2025) "The LiverTwin: a novel ex-vivo experimental platform for multi-modal image-guided liver cancer treatment studies". *10th Dutch Bio-Medical Engineering Conference.* link

[4] **Chizari, A.**, A., Schaap, M.J., Knop, T., Seyger, M.M. and Steenbergen, W., 2023, June. Speed detection to suppress motion artifacts (MA) in laser speckle contrast imaging (LSCI).TechMed Research Day. University of Twente. link

[3] Hosseinianfar, H., **Chizari, A.**, and Salehi, J.A., 2019, January. GOPA: Geometrical Optics Positioning Algorithm. In 2019 IEEE International Conference on Consumer Electronics (ICCE) (pp. 1-6). IEEE. link

[2] Padmanaban, P., **Chizari, A.**, Steenbergen, W. and Rouwkema, J., 2018, November. Inside the box: 3D system to probe the vascular networks within developing chicken embryo. In 27th NBTE Annual Meeting 2018. link

[1] Fischer, B., **Chizari, A.**, Knop, T., and Steenbergen, W., 2017. Chilli pepper and keeping cancer under control. TEKNOWLOGY-NWO, Amersfoort, The Netherlands. link 1 link 2

Book chapter

Chizari, A., Padmanaban, P., Steenbergen, W. and Rouwkema, J., 2024. microvascular imaging techniques. *In preparation*

Media

[6] VENI laureate within mechanical engineering department of Technical University of Delft, link 1 link 2 link 3 July 2025

[5] Support and promotion of the handheld perfusion imager (HAPI) by the *Thematic Technology Transfer (TTT)* program, link 1 link 2 Apr. 2024

[4] Iranian Scholars for Liberty, University of Twente, *Tubantia*, link Nov. 2022

[3] A summary of my PhD research "Hand-held laser speckle imaging for flexible medical diagnostics", *U-Today*, link Oct., 2021.

[2] A team member in the Pioneers in Healthcare (PIHC) granted project "Improving free flap transplantation with the use of handheld laser speckle perfusion imaging", *Tubantia*, link Mar. 2021.

[1] A member of ZPV Piranha swimming team "The Netherlands student swimming competition (NSZK) 1, in Nijmegen", *U-Today*, link Oct. 2018.

Teaching and supervision

Member of graduation committee

[4] Soheila Mardani Mehrabad (PhD candidate, Integrated Photonics) ..... April 21, 2026
Thesis title: Aluminum nitride and aluminum oxide for broadband integrated photonics, University of Twente. link
Role: external committee member
Supervisor: Prof.dr. S.M. García Blanco

[3] Boris ter Braak (undergraduate, biomedical engineering) ..... Jul. 2024
Thesis title: Development and implementation of a user-friendly software interface for a multispectral imaging camera for enhanced contrast in medical applications, University of Twente.
Role: external committee member
Supervisor: Prof.dr.ir. RM Verdaasdonk

[2] Esmee Bulter (undergraduate, biomedical engineering) ..... Jul. 2024
Thesis title: Development and validation of a portable ICG fluorescent imaging system (**in Dutch**), University of Twente.
Role: external committee member
Supervisor: Prof.dr.ir. RM Verdaasdonk

[1] M.J. (Ries) van Walsum (undergraduate, biomedical engineering) ..... Feb. 2022
Thesis title: development of a skin-mimicking layer for a photoacoustic breast phantom, University of Twente.
Role: external committee member
Daily supervisor: Dr.ir. M. Dantuma
Supervisor: Prof.dr. S. Manohar

Student supervision

[19] Anne Rook (PhD student, Technical medicine) ..... expected: Aug. 2026
Thesis title (preliminary): clinical applications of wireless laser speckle contrast imaging: plastic surgery and burns, University of Twente.
Role: co-supervisor
Supervisor: Prof.dr.ir. W. Steenbergen

[18] Michael Kaya (graduate, Biomedical engineering) ..... Feb. 2025
Thesis title: Investigating the Origin of the Photoplethysmography Signal: An In-Depth Study of Underlying Mechanisms and Factors, University of Twente.
Role: daily supervisor
Supervisor: Prof.dr.ir. W. Steenbergen

[17] Jules Blom (graduate, Applied physics) ..... Mar. 2025
Thesis title: Motion artifacts in laser speckle contrast imaging: influence of rotations, Uni-

versity of Twente.
Role: daily supervisor
Supervisor: Prof.dr.ir. W. Steenbergen

[16] Micha de Bont (graduate, Biomedical engineering) ..... Apr. 2025
Thesis title: A framework for personalized optical wearable blood flow sensing enabled by Monte Carlo simulations, University of Twente.
Role: daily supervisor
Supervisor: Prof.dr.ir. W. Steenbergen

[15] Rithvik Bangari (undergraduate, advanced technology) ..... Jul. 2024
Thesis title: Study of Optimal Sensor Pressure in Reflection Mode Photoplethysmography, University of Twente.
Role: daily supervisor
Supervisor: Prof.dr.ir. W. Steenbergen

[14] Eline Zoetelief (graduate, technical medicine, M3) ..... Aug. 2023
Thesis title: explorative study of thermal footprint imaging as method to early detect diabetic foot ulcers in a domestic setting: the Bath Mat, University of Twente. link
Role: daily supervisor
Supervisor: Prof.dr.ir. W. Steenbergen

[13] Felix Torrenga (graduate, technical medicine, M2) ..... Feb. 2023
Internship title: the Bath Mat: a minimally invasive way for documenting the temperature of the foot, University of Twente.
Role: daily supervisor
Supervisor: Prof.dr.ir. W. Steenbergen

[12] Alieke Keurhorst (graduate, technical medicine, M2) ..... Oct. 2022
Internship title: Bath Mat: an automated diabetic ulcer warning system for the entire foot, integrated in a domestic setting, University of Twente.
Role: daily supervisor
Supervisor: Prof.dr.ir. W. Steenbergen

[11] Sacha Teunissen (graduate, technical medicine, M3) ..... Aug. 2022
Thesis title: wireless laser speckle contrast imaging during DIEP flap breast reconstruction: an evaluation of the first prototype, University of Twente. link
Role: daily supervisor
Supervisor: Prof.dr.ir. W. Steenbergen

[10] Ralph Gerlings (undergraduate, advanced technology) ..... Aug. 2022
Thesis title: thermal imaging as a quantitative measurement method of blood perfusion in the skin, University of Twente.
Role: daily supervisor
Supervisor: Prof.dr.ir. W. Steenbergen

[9] Micha de Bont (undergraduate, applied physics) ..... Feb. 2022
Thesis title: thermal measurements of absolute skin perfusion: a proof of concept, University of Twente.
Role: daily supervisor
Supervisor: Prof.dr.ir. W. Steenbergen

[8] Wilson Tsong (graduate, applied physics) ..... Aug. 2021
Thesis title: Theoretical prediction of translational movement artefacts in laser speckle contrast imaging, University of Twente.
Role: daily supervisor
Supervisor: Prof.dr.ir. W. Steenbergen

[7] Sven Schwieters (undergraduate, biomedical engineering) ..... Jul. 2021
Thesis title: detection of on-surface movements employing optical flow and its relation with speckle contrast, University of Twente. link
Role: daily supervisor
Supervisor: Prof.dr.ir. W. Steenbergen

[6] Tommie Verouden (undergraduate, applied physics) ..... Nov. 2020
Thesis title: hardware-based prevention & simulation of movement artifacts in laser speckle contrast perfusion imaging, University of Twente.
Role: daily supervisor
Supervisor: Prof.dr.ir. W. Steenbergen

[5] Wilson Tsong (graduate, applied physics, capita selecta) ..... Apr. 2020
Title: simulation of time-integrated dynamic optical speckles, University of Twente.
Role: daily supervisor
Supervisor: Prof.dr.ir. W. Steenbergen

[4] Klaas Vlasma (undergraduate, biomedical engineering) ..... Jul. 2018
Thesis title: motion artifacts in laser speckle contrast imaging of blood flow, University of Twente.
Role: daily supervisor
Supervisor: Prof.dr.ir. W. Steenbergen

[3] Mirjam J. Marseille (undergraduate, applied physics) ..... Sep. 2017
Thesis title: analysis of human skin perfusion based on laser Doppler perfusion imaging and Monte Carlo simulation, University of Twente.
Role: daily supervisor
Supervisor: Prof.dr.ir. W. Steenbergen

[2] Mona Zarrinsaz Sorkhabi (graduate, communication systems) ..... Sep. 2015
Thesis title: analysis of the poynting vector error effect on the multi-input multi-output receivers in wireless communication systems, Shahid Beheshti University (SBU).
Role: daily supervisor
Supervisor: Dr. A. Dargahi

[1] Pouya Shiri (undergraduate, electronics) ..... Sep. 2014
Thesis title: design and implementation of a donut-shaped three-dimensional display based on a single light-emitting diode, Shahid Beheshti University (SBU).
Role: daily supervisor
Supervisor: Prof. M. Eshghi

Teaching Assistant

[16-20] Biomedical Optics 2017, 2018, 2021, 2022, 2023
Role: tutored graduate students and other lab assistants in the practical sessions on light scattering and absorption, laser speckle, diffuse reflectance, and *low coherence interferometry*, and evaluated the lab journals
Prof.dr.ir. W. Steenbergen, Prof.dr. S. Manohar, Prof.dr.ir. I.M. Vellekoop, and Prof.dr.ir. N. Bosschaart ..... University of Twente

[15] Microscopic detection of cancer cells ..... Feb. 2022
Role: jury for the optics part of final poster pitch
Prof.dr. S. Manohar ..... University of Twente (undergraduate, module 2)

[12-14] Ultrasound ..... Spring 2018, Spring 2019, Spring 2020
Role: tutored undergraduate students of applied physics, *mechanical*, and biomedical engineering in practical sessions on the estimation of speed of sound, material thickness, and acoustic attenuation and reflectance based on Fourier analysis. Also, evaluated the lab assignments.
Prof.dr.ir. W. Steenbergen ..... University of Twente

[9-11] Fiber Optic Communications ..... Fall 2014, Spring 2015, Fall 2015
Role: tutored graduate students of communication systems in the practical sessions covering various modulation schemes and signal processing in optical fiber communication networks and evaluated the lab assignments.
Dr. A. Dargahi ..... Shahid Beheshti University

[8] Field-Programmable Gate Array (FPGA) ..... Fall 2014
Role: tutored undergraduate students of electrical engineering during the practical sessions covering logical circuit design using Xilinx FPGA evaluation boards programmed with ladder diagrams and evaluated the lab assignments.
Dr. A. Dargahi ..... Shahid Beheshti University

[7] Microprocessors ..... Spring 2014
Role: tutored undergraduate students of electrical engineering in the practical sessions focusing on programming microprocessors in C and evaluated the lab assignments.
Prof. M. Eshghi ..... Shahid Beheshti University

[6] Logical Circuits ..... Fall 2013
Role: tutored undergraduate students in electrical engineering during practical sessions targeting project-based group assignments to make practical systems with basic logic ICs such as a mini elevator. Then, I evaluated the final products and reports.
Prof. M. Eshghi ..... Shahid Beheshti University

[5] Electronics II ..... Spring 2013
Role: while being an undergraduate student myself, I tutored undergraduate students in electrical engineering on topics such as analog electrical amplifiers, operational amplifiers, and feedback-based circuits. Then, I evaluated the final course exams.
Dr. F. Hajati ..... Tafresh University

[3-4] Logical Circuits and Microprocessors ..... Fall 2012
Role: while being an undergraduate student myself, I tutored undergraduate students in electrical engineering in both logical circuits and microprocessors courses during practical sessions focused on circuit development (such as 7-segment) based on CPLD evaluation boards programmed in VHDL, and practical application-orientated circuits using AVR microprocessors programmed in C. Also, I conducted and evaluated the lab assignments and final exams.
Dr. A.M. Fotouhi ..... Tafresh University

[2] Electrical Circuits ..... Spring 2012
Role: while being an undergraduate student myself, I tutored undergraduate students in electrical engineering covering topics such as electrical circuit analysis using Laplace transform, and evaluated the course assignments.
Dr. H. Meshgin-kelk ..... Tafresh University

[1] Computer Architecture ..... Fall 2011
Role: while being an undergraduate student myself, I tutored undergraduate students in electrical engineering covering topics such as application development based on assembly machine language, and evaluated the course assignments.
Prof. A. Raie ..... Tafresh University

Leadership

Session chair at the Techmed Research day, University of Twente, Enschede, 2024-2025

Session chair at Laser Applications in Life Science session on Multimodal Multispectral approaches, Université de Lorraine, Nancy 2022

Lead practicum assistant for Biomedical Optics master's course, University of Twente spring 2022 and spring 2023

Head of development at Afra Engineering Group, RFID-based smart card service for scientific conferences, Shahid Beheshti University Feb. 2014 - Sep. 2016

References

Dr. Nandini Bhattacharya
Head, Optics for Technology group
Department of Precision and Microsystems Engineering,
Faculty of Mechanical Engineering,
Delft University of Technology,
Delft, The Netherlands.
n.Bhattacharya@tudelft.nl link

Prof.dr.ir. Wiendelt Steenbergen
Interim Dean, Faculty of Science and Technology
Head, Biomedical Photonic Imaging group
University of Twente, Enschede, The Netherlands
w.steenbergen@utwente.nl link

Prof.dr. Srirang Manohar
Chair of Multi-Modality Medical Imaging (M3I)
University of Twente, Enschede, The Netherlands
s.manohar@utwente.nl link

Dr.ir. Ferdinand van der Heijden
Associate Professor Medical Image Analysis (retired)
University of Twente, Enschede, The Netherlands
f.vanderheijden@utwente.nl link

Dr.ir Jeroen Rouwkema
Associate Professor, Vascularization Lab
University of Twente, Enschede, The Netherlands
j.rouwkema@utwente.nl link

Dr. Marieke Seyger
Dermatologist, Department of Dermatology
Radboud University Medical Center, Nijmegen, The Netherlands
marieke.seyger@radboudumc.nl link

Technical review activities

- IEEE (Transactions on Medical Imaging, Transactions on Biomedical Engineering, Transaction on Vehicular Technology, Vehicular Technology Magazine, Photonics Journal, Access, Communications Letters, IEEE-EMBS BHI)
- Elsevier (Optics Communications, Physical Communication, Optik - International Journal for Light and Electron Optics, Quantitative imaging in medicine and surgery, Biomedical signal processing and control, Optics and lasers in engineering, Microvascular research, Optics & Laser Technology, Measurement, Results in Engineering, Journal of Tissue Viability, Information Sciences, Current Problems in Surgery
- Optica (Journal of Optical Communications and Networking, Optics Letters, Optics Express, Biomedical Op-

tics Express, Journal of the Optical Society of America A)

- SPIE-SOC (Optical engineering, Journal of Biomedical Optics)
- IOP (Journal of Optics)
- Springer Heidelberg (Scientific Reports, European physical journal plus)
- MDPI (Sensors, Electronics, Micromachines, Energies, Symmetry, Entropy, Axioms, Applied sciences, AI)
- Taylor & Francis (Journal of Modern Optics)
- AME Quantitative imaging in medicine and surgery
- Chinese Optics Letters

Extra-Curricular Activities

Long-distance runner, total distance by Mar. 2025: 3641km — 2017-present
Enschede Marathon 2022 total time: 4:59:37
Enschede Marathon 2019 total time: 4:27:00

Triathlete — 2019-2022
2022 IRONMAN 70.3 Maastricht-Limburg (1/2nd)
Swimming 2 km, 43:51, cycling 90 km, 3:43.51, running 21.1 km, 2:53.20
2022 IRONMAN 70.3 Westfriesland (1/2nd)
Swimming 2 km, 46:10, cycling 90 km, 3:20.43, running 21.1 km, 2:41.20

Scuba diver — 2019-2021
SSI recognition: level 3
SSI Diver ID (MID): 2527470
Master dive center: ZPV Piranha (714007)
Total dives: 34

Selected Certifications

- Career College — Jul. 2024
- Privacy and Security Awareness — Jun. 2024
- Cambridge Certificate in Advanced English (**C1)** — Aug. 2022
- Driving licence (AM and B) — Mar. 2022
- *NT2-Programma II*, Dutch as the second language (**B2)** — Jul. 2021
- Basic life support and defibrillation (BLS-D) including first aid — May 2021
- Biophotonics graduate summer school (BIGSS), link — Aug. 2020

  Topics studied:
  - Tissue Optics and Laser-Tissue Interactions
  - Endoscopy
  - Optics in Surgery and Radiation Therapy - Photochemistry / Radiochemistry
  - Optical Coherence Tomography
  - Vital Fluorescence Reporters, Sensors, and Optogenetic Tools for Biophotonics
  - Polarized Light in Biomedical Optics
  - Photoacoustics
  - Technologies and Clinical Translation of Deep Tissue Blood Flow
  - Light Based Therapeutics
  - Tissue Optics and Laser-Tissue Interactions

Links

- ORCID https://orcid.org/0000-0001-7679-7077
- Web of science ID: R-5148-2017 https://www.webofscience.com/wos/author/record/626123
- Scopus ID: 57190381690 https://www.scopus.com/authid/detail.uri?authorId=57190381690
- Google Scholar https://scholar.google.nl/citations?user=jpkWuLMAAAAJ&hl=en
- Research Gate `https://www.researchgate.net/profile/Ata_Chizari2`
- Linkedin `https://www.linkedin.com/in/ata-chizari-045969a9/?ppe=1`
- Strava `https://www.strava.com/athletes/20825743`
- X (Twitter) `https://twitter.com/atachizari`
- Facebook `https://www.facebook.com/ata.chizari`
- Instagram `https://www.instagram.com/atachizari`
- YouTube `https://www.youtube.com/@atachizari8091`
- SPIE `https://spie.org/profile/chizari`
- Swimrankings `https://www.swimrankings.net/index.php?page=athleteDetail&athleteId=5517936&athletePage=PBEST`

Software skills

- Operating Systems: Linux, Mac, Windows
- Documentations: LaTeX, Microsoft Office
- Simulators and image processing: MATLAB, ImageJ, Opti-System, CST Design Studio, Cadence (Analog Circuits)
- Compilers: Thonny, CodeVision AVR, AVR Studio, Quartus, Xilinx ISE
- Designers: Solidworks, Adobe (Animate, Premiere, Illustrator, and Photoshop), AutoCAD, Altium Designer
- Version Controller: GIT bash, GIT GUI
- Programming languages: Python, MATLAB, C, VHDL, Assembly

Memberships and subscription

- International society for optics and photonics (SPIE), link 2022-2025
- Nature journal 2019-2024
- IEEE Communications Society (93943136) 2016

Generic courses

- Cambridge Proficiency English (C2) Sep. 2021- Feb. 2022
- Entrepreneurial researcher . Nov. 2020
- Software Engineering Tutorial . Sep. - Oct. 2018
- NT2 High Proficiency Dutch (C1) Sep. - Dec. 2018
- Cambridge Advanced English (C1) Apr. - Nov. 2018
- Dutch Follow-up III (B2) Mar. - Jun. 2018
- Cambridge First Certificate (B2) Oct. 2017 - Apr. 2018
- Scientific Information Boot-camp Jan. 2018
- Dutch Follow-up II (B1) . Nov. 2017 - Mar. 2018
- Laser Safety for Users . . . . . Jan. 2018
- Designing a Lesson and a Course Jan. 2018
- Write to Publicize . . . Nov.- Dec. 2017
- English for Lectures . Nov.- Dec. 2017
- Creative Thinking . . . . . Nov. 2017
- Storytelling and How to make your Lessons Stick . . . . . Nov. 2017
- Dutch Follow-up I (A2) . . . Sep.- Nov. 2017

- Basics on How to Create an Industrial Video ..... Oct. 2017
- Practical Teaching Skills ... Oct. 2017
- Project Management for PhD Students Oct. 2017
- PhD Introductory Workshop .... Sep. 2017
- Supervising Students ..... Sep. 2017
- Research Data Management Sep. 2017
- Orientation on the University of Twente Bachelor Educational Program Jul. 2017
- Getting Started with the CE Stamp on your Medical Devices ..... Jun. 2017
- Dutch for Beginners (A1) Apr. - Jun. 2017
- From Idea to Patent and to Business May 2017
- Transferable Skills ..... Apr. 2017

Graduate courses

- Spring 2017 ..... University of Twente
  Biomedical Optics ..... Audited

- Spring 2015 Sharif University of Tech.
  Data Communication Networks Audited
  Advanced Data Comm. Networks Audited
  Optical Comm. Networks .... Audited

- Spring 2015 ..... Shahid Beheshti University
  Thesis 19.75
  Optoelectronics II ..... Audited

- Fall 2014 ... Sharif University of Tech.
  Statistical Optical Comm. ... Audited

- Fall 2014 . Shahid Beheshti University
  Thesis ..... Proj. Cont.
  Information theory and Coding I 17.3
  Optoelectronics I 17.8

- Spring 2014 ..... Shahid Beheshti University
  Spread Spectrum 17.5
  Optical Communication Systems .. 17
  Wireless Communications 19.75
  Seminar 19

- Fall 2013 . Shahid Beheshti University
  Stochastic Processess 15.5
  Advanced Communication Theory 17.6
  Digital Signal Processing 15.15

- Spring 2013 ..... Tafresh University
  Image Processing 20