



ALLEGATO B

DICHIARAZIONI SOSTITUTIVE DI CERTIFICAZIONI

(art. 46 D.P.R. n. 445/2000)

DICHIARAZIONI SOSTITUTIVE DELL'ATTO DI NOTORIETÀ

(art. 47 D.P.R. n. 445/2000)

..il... sottoscritto...

COGNOME VADAKKUM VADUKKAL  
(per le donne indicare il cognome da nubile)

NOME UDITH KRISHNAN

NATO A: \_\_\_\_\_ PROV. \_\_\_\_\_

IL \_\_\_\_\_

ATTUALMENTE RESIDENTE A: \_\_\_\_\_

\_\_\_\_\_ PROV. \_\_\_\_\_

INDIRIZZO \_\_\_\_\_ C.A.P. \_\_\_\_\_

TELEFONO \_\_\_\_\_

Visto il D.P.R. 28 dicembre 2000, n. 445 concernente "T.U. delle disposizioni legislative e regolamentari in materia di documentazione amministrativa" e successive modifiche ed integrazioni;

Vista la Legge 12 novembre 2011, n. 183 ed in particolare l'art. 15 concernente le nuove disposizioni in materia di certificati e dichiarazioni sostitutive (\*);

Consapevole che, ai sensi dell'art.76 del DPR 445/2000, le dichiarazioni mendaci, la falsità negli atti e l'uso di atti falsi sono punite ai sensi del Codice penale e delle leggi speciali vigenti in materia, dichiara sotto la propria responsabilità:

che quanto dichiarato nel seguente curriculum vitae et studiorum  
comprensivo delle informazioni sulla produzione scientifica  
corrisponde a verità

Curriculum vitae et studiorum

studi compiuti, i titoli conseguiti, le pubblicazioni e/o i rapporti tecnici e/o i brevetti, i servizi prestati, le funzioni svolte, gli incarichi ricoperti ed ogni altra attività scientifica, professionale e didattica eventualmente esercitata (in ordine cronologico iniziando dal titolo più recente)

10/1/24



## Education

**Postdoctoral Researcher (Research Fellow) 01/12/2021 – Present (end of research fellowship 29/2/2024)**

Institute of Intelligent Industrial Systems and Technologies for Advanced Manufacturing (STIIMA)

National Research Council of Italy (CNR)

Bari, Italy

**Ph.D. in Physics (Industrial & Experimental) 1/7/2017 – 30/6/2020 (PhD awarded on 23/11/2020)**

Università degli Studi di Bari Aldo Moro, Bari, Italy

[Collaborated with STMicroelectronics, Lecce (Spent 1 year) and University of Strathclyde, Glasgow (Spent 6 months)]

Title of thesis: **Femtosecond laser-based procedures for the rapid prototyping of polymeric Lab-on-a-chip devices**

Other information: PhD certificate register n. 15 – (Date: 07/04/2021) please see attached document “PhD Certificate.pdf”

**Integrated MSc in Photonics (5 Year)**

**13/09/2011 – 10/05/2016**

International School of Photonics

Cochin University of Science and Technology, Cochin, India

CGPA: **7.08**

Other information: please see attached file “Dichiarazione di valore in loco.pdf”

## Experience

**1. Employer Name:** National Research Council of Italy (CNR)

**Address:**

Institute of Intelligent Industrial Systems and Technologies for Advanced Manufacturing (STIIMA) - CNR Via Giovanni Amendola, 122 D/O, 70126 Bari BA

Bari, Italy

**Position:** Postdoctoral Researcher (Research Fellow)

**Date of Employment:** December 1, 2021 – February 29, 2024

**Duties Performing:**

- Image processing and analysis
- Semantic segmentation using deep learning for computer vision systems
- Understanding color spaces and color constancy
- Object detection using deep learning in MATLAB and Python
- Self-supervised learning in Python
- Autoencoders in MATLAB and Python

**2. Employer Name:** Università degli Studi di Bari Aldo Moro

**Address:**

Piazza Umberto I, 1, 70121 Bari BA

Bari, Italy

**Position:** Ph.D. Student

**Date of Employment:** July 1, 2017- November 23, 2020



### **Duties Performed:**

- Designing of Lab-on-a-chip devices for specific applications in biomedical field
- Understanding laser-matter interaction on transparent materials
- Microfabrication of the polymeric Lab-on-a-chip devices using femtosecond lasers
- Optimization of the laser parameters for the microfabrication
- Microfabrication of the device using hot embossing
- Bonding of the Lab-on-a-chip devices
- Smart procedure for the rapid prototyping of polymeric Lab-on-a-chip devices
- Microscopic imaging and morphological characterization of the micro-features
- Testing and validation of the Lab-on-a-chip devices using biological samples
- Meeting regularly with the research team and the industrial partners (STMicroelectronics, Lecce) to discuss the project progress
- Collaborate in research with both the industrial partner and the international partner (University of Strathclyde, Glasgow)
- Present technical papers at conferences and publish in peer reviewed scientific journals
- Maintain strong dedication to the implementation and perpetuation of values and ethics

**PhD Supervisors:** Dr. Antonio Ancona and Dr. Ing. Francesco Ferrara

**Funded under:** Dottorati di Ricerca Innovativi a caratterizzazione industriale PON FSE-FESR RI 2014- 2020, Azione 11

**3. Employer Name:** Varroc Lighting Systems India PVT. Ltd.

### **Address:**

Survey No. 279, Mann, Hinjewadi, Taluka Mulshi  
Pune, Maharashtra 411057, India

**Position:** Project engineer (Optics)

**Date of Employment:** February 13, 2017- May 26, 2017

### **Duties Performed:**

- Fundamental catalog studies of CATIA V.5 software
- Basic drawing using CATIA V.5 tools
- Optics designing for automotive head lamps and rear lamps

### **Completed projects**

- "Frequency up-conversion mechanism in various donor-acceptor systems when excited by second harmonic of Nd:YAG laser" - Master project dissertation under the guidance of Dr. S.K Sreenivasan Nair at Toc-H Institute of Science and Technology (November 27, 2015 – April 30, 2016)
- "Bio-synthesis of silver nano particles" – Summer Internship under the guidance of Dr. Ajmal PN at International School of Photonics, CUSAT (May 1, 2015 – June 30, 2015)
- "Simulation of index guided photonic crystal fibers" – Curriculum mini project under the guidance of Ms. Sarika K. S, faculty, International School of Photonics, CUSAT (December 5, 2013 – April 30, 2014)



## Summary of Technical Skills

- Femtosecond laser micro-machining of opaque and transparent materials
- Solvent assisted thermal bonding of polymer substrates
- Microscopic morphological characterization of the laser machined samples
- Hot embossing
- Soft lithography and spin coating
- Femtosecond laser bonding of transparent materials
- Semantic segmentation using deep learning in MATLAB
- Autoencoders for object/defect detection in Python
- Self-supervised learning for object/defect detection in Python

## Publications

- **Udith Krishnan\***, M. Palumbo, Giovanni Attolico, "Semantic segmentation of packaged and unpackaged fresh-cut apples using deep learning" – Applied Sciences 2023, 13,6969. <https://doi.org/10.3390/app13126969>
- A. Volpe, **U. Krishnan**, M.S. Chiriaco, E. Primiceri, A. Ancona, F. Ferrara, A smart procedure for the femtosecond laser-based fabrication of a polymeric lab-on-a-chip for capturing tumor cell, *Engineering* (2020), <https://doi.org/10.1016/j.eng.2020.10.012>
- Annalisa Volpe, Gianluca Trotta, **Udith Krishnan**, Antonio Ancona "Prediction model of the depth of the femtosecond laser micro-milling of PMMA". Optics and Laser Technology 120 (2019) 105713. <https://doi.org/10.1016/j.optlastec.2019.105713>

## International conference proceedings

- **Udith Krishnan Vadakkum Vadukkal**, Angelo Cardellicchio, Nicola Mosca, Maria di Summa, Massimiliano Nitti, Ettore Stella, and Vito Rendò, "Enhancing Railway Safety: An Unsupervised Approach for Detecting Missing Bolts with Deep Learning and 3D Imaging", ICPRAM 2024, 13<sup>th</sup> International Conference on Pattern Recognition Applications and Methods. Rome, Italy. 24-26 February 2024. - Accepted for publication.

## Abstract accepted for oral communications to International Conferences

- Palumbo M., Cefola M., Pace B., **Udith V.**, Colelli G., G. Attolico "Machine learning techniques for quality evaluation and internal parameters estimation in agricultural products" – Abstract accepted for the oral presentation. VII International Symposium on Applications of Modelling as an Innovative Technology in the Horticultural Supply Chain (MODEL-it 2023), June 11-14, 2023 at Leibniz Institute for Agricultural Engineering and Bioeconomy (ATB), Potsdam, Germany. Check abstract is available on conference proceedings
- **Udith Krishnan**, Annalisa Volpe, Maria Serena Chiriaco, Elisabetta Primiceri, Giuseppe Maruccio, Francesco Ferrara, Antonio Ancona. "Femtosecond laser based smart procedures for the fabrication of polymeric lab on a chip devices" - Abstract accepted for oral presentation. 21st International Symposium on Laser Precision Microfabrication, 23-26 June 2020 – Dresden, Germany.
- A. Volpe, P. Paiè, **U. Krishnan V.V.**, A. Ancona, R. Osellame. "Femtosecond laser micromachining of a polymeric Lab-on-a Chip for particle sorting"- Abstract accepted for oral presentation. International Symposium "Fundamentals of Laser Assisted Micro- and Nanotechnologies" (FLAMN-19), June 30-July 04, 2019, St. Petersburg, Russia.
- "Femtosecond laser micro-fabrication of polymeric lab-on-chip for advanced and mini-invasive diagnostics" – Abstract accepted for oral presentation. International School on Laser Micro/Nanostructuring and Surface Tribology 1-5 October 2018 – Bari, Italy.



### Abstract accepted for poster presentations

- **Udith Krishnan**, Annalisa Volpe, Maria Serena Chiriaco, Elisabetta Primiceri, Antonio Ancona, Francesco Ferrara "Smart procedure for the femtosecond laser-based fabrication of polymeric lab on a chip for tumor cells capturing"- 1st International workshop on Emerging and Disruptive next-GEneration Technologies for POC (EDGE-Tech); 26-30 October 2020
- "Fs-laser based smart procedures for the fabrication of polymeric Lab on a Chip devices" – Science and Industry for environment, Health and Digital Society Technologies; Industrial PhD Day at Università degli Studi di Bari Aldo Moro – 26 June 2019

### Conferences, Workshops, Symposia and Summer schools attended

- VII International Symposium on Applications of Modelling as an Innovative Technology in the Horticultural Supply Chain (MODEL-it 2023), June 11-14, 2023 at Leibniz Institute for Agricultural Engineering and Bioeconomy (ATB), Potsdam, Germany.
- 1st International workshop on Emerging and Disruptive next-GEneration Technologies for POC (EDGE-Tech); 26-30 October 2020
- 21st International Symposium on Laser Precision Microfabrication, 23-26 June 2020 – Dresden, Germany
- International School on Laser Micro/Nanostructuring and Surface Tribology 1-5 October 2018 – Bari, Italy
- Wavelab Course Optical System Design using ZEMAX (22-25 August 2014)
- OSA short course on Nanophotonics: Design, Fabrication, and Characterization at 2014 Laser World of Photonics India. (23-9-2014 Bangalore)
- OSA short course on Packaging of Optoelectronic Components at 2014 Laser World of Photonics India. (23-9-2014 Bangalore)
- National Workshop on Energy Materials (EM -2014) organized by the Department of Physics, CUSAT. (4-12-2014)
- Annual Photonics Workshops held at International School of Photonics, CUSAT. (27-28 February 2012-2016)

### Languages

Fluent in English, Malayalam and Tamil, Intermediate in Italian and Hindi

FIRMA(\*\*)

*(\*) ai sensi dell'art. 15, comma 1 della Legge 12/11/2011, n. 183 le certificazioni rilasciate dalla P.A. in ordine a stati, qualità personali e fatti sono valide e utilizzabili solo nei rapporti tra privati; nei rapporti con gli Organi della Pubblica Amministrazione e i gestori di pubblici servizi, i certificati sono sempre sostituiti dalle dichiarazioni sostitutive di certificazione o dall'atto di notorietà di cui agli artt. 46 e 47 del DPR 445/2000*

**N.B:**

- 1) Datare e sottoscrivere tutte le pagine che compongono la dichiarazione.
- 2) Allegare alla dichiarazione la fotocopia di un documento di identità personale, in corso di validità.
- 3) Le informazioni fornite con la dichiarazione sostitutiva devono essere identificate correttamente con i singoli elementi di riferimento (esempio: data, protocollo, titolo pubblicazione ecc...)



4) Il CNR, ai sensi dell'art. 71 e per gli effetti degli artt. 75 e 76 del D.P.R. 445 del 28/12/2000 e successive modifiche ed integrazioni, effettua il controllo sulla veridicità delle dichiarazioni sostitutive.

5) La normativa sulle dichiarazioni sostitutive si applica ai cittadini italiani e dell'Unione Europea.

6) I cittadini di Stati non appartenenti all'Unione, regolarmente soggiornanti in Italia, possono utilizzare le dichiarazioni sostitutive di cui agli artt. 46 e 47 del D.P.R. 445 del 28.12.2000 limitatamente agli stati, alla qualità personali e ai fatti certificabili o attestabili da parte di soggetti pubblici italiani, fatte salve le speciali disposizioni contenute nelle leggi e nei regolamenti concernenti la disciplina dell'immigrazione e la condizione dello straniero.

Al di fuori dei casi sopradetti, i cittadini di Stati non appartenenti all'Unione autorizzati a soggiornare nel territorio dello Stato possono utilizzare le dichiarazioni sostitutive nei casi in cui la produzione delle stesse avvenga in applicazione di convenzioni internazionali fra l'Italia e il Paese di provenienza del dichiarante.