CURRÍCULUM VÍTAE NORMALIZADO

Ignacio Arganda Carreras

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GOBIERNO DE ESPAÑA MINISTERIO DE CIENCIA, INNOVACIÓN Y UNIVERSIDADES

FECYT FUNDACIÓN ESPAÑOLA PARA LA CIENCIA Y LA TECNOLOGÍA

Summary of CV

This section describes briefly a summary of your career in science, academic and research; the main scientific and technological achievements and goals in your line of research in the medium -and long- term. It also includes other important aspects or peculiarities.

Graduated on Computer Science at the Universidad Autónoma de Madrid in 2002. Obtained PhD in Computer Science and Telecommunications from the Universidad Autónoma de Madrid in 2009. Thesis awarded as the best PhD thesis of the year and the European Doctorate mention. Research stays on three different institutions during PhD: at the Lawrence Berkeley National Laboratory (Berkeley, CA, USA) for 13 months in total (2002-2004); the Centre for Machine Perception of the Czech Technical University of Prague (for 3 months, July-September 2005); and the Centro de Investigación Médica Aplicada of Pamplona, Navarra (Spain) for 3 months (July-October 2006). Research technician at the Institute of Neuroinformatics (University of Zürich/ETH, Zurich, Switzerland) for 5 months (May-September 2009) and consultant at the Max Planck Institute for Molecular Cell Biology and Genetics in Dresden (Germany) for one month (October 2009). Postdoctoral fellow at the Brain and Cognitive Sciences department of the Massachusetts Institute of Technology (Cambridge, MA, USA) from November 2009 to April 2013; and at the Modelling and Digital Imaging lab at the Institute Jean-Pierre Bourgin (INRA, Versailles, France) from May 2013 to August 2015. Currently an Ikerbasque Research fellow at the Computer Science and Artificial Intelligence department of the Basque Country University (San Sebastian, Guipuzcoa, Spain).

I have extensively studied image registration and, in particular, its application on biomedical image data in 2D and 3D. A systematic study of registration techniques on histological sections was carried out during my PhD thesis. After solving the challenging problem of registering large sequences of histological sections, I focused on the 3D reconstruction and statistical analysis of the ductal system of the mouse mammary gland. This worked successfully led to the first three-dimensional rendering of entire mouse mammary gland at microscopic resolution (videos publicly available). The results were validated using a synthetic phantom and simulated sectioning at different thicknesses. The analysis tool for the tree-like structure of the mammary ducts included 3D skeletonization and graph analysis and quantification routines proved easily extensible to other biomedical data such as bones.

On my postdoctoral research, I investigated novel solutions to some of the challenges of modern computational neuroscience. At Cardona's lab, I developed part of the open source software TrakEM2, able to handle terabytes of image data on regular personal computers and allowing easy alignment, manual and semi-automatic annotation and statistical analysis. Finally, for the last years of my research experience, I have focused on three main research lines:

1) Studying machine learning approaches to segmentation of neural processes in electron microscopy. In prof. Seung's lab, I developed an interactive-learning solution based on precomputed image features and a classifier chosen by the user. In parallel, I successfully organized the first ever challenge on segmentation of neurites in EM data.

2) Creating statistically plausible templates of Drosophila adult brains by means of group-wise registration methods of 3D confocal images.

3) Applying deep-learning to a wide range of computer vision applications, namely: activity recognition in videos, facial image analysis, bio-medical images, etc.

General quality indicators of scientific research

This section describes briefly the main quality indicators of scientific production (periods of research activity, experience in supervising doctoral theses, total citations, articles in journals of the first quartile, H index...). It also includes other important aspects or peculiarities.

14454 citations (Google Scholar, 15/02/2019).

Ignacio Arganda Carreras

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ResearcherID:	**L-4605-2014**
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Gender:	**Male**
Nationality:	**Spain**
Country of birth:	**Spain**
Aut. region/reg. of birth:	**Community of Madrid**
Contact province:	**Gipuzkoa**
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Current professional situation

Employing entity: FUNDACION IKERBASQUE/IKERBASQUE FUNDAZIOA
Department: Computer Science and Artificial Intelligence, Basque Country University
Professional category: Ikerbasque Research Fellow
Start date: 01/09/2015
Type of contract: Temporary employment contract **Dedication regime:** Full time
Primary (UNESCO code): 330400 - Computer technology
Secondary (UNESCO code): 249000 - Neurosciences
Identify key words: Computer applications; Software

Previous positions and activities

	Employing entity	Professional category	Start date
1	Institut National de la Recherche Agronomique	Postdoctoral research associate	13/05/2013
2	Massachusetts Institute of Technology	Postdoctoral research associate	16/11/2009
3	Max Planck Institute of Molecular Cell Biology and Genetics	Consultant	07/10/2009
4	University of Zurich (UZH) / Swiss Federation of Technology (ETH)	Research technician	01/05/2009

1 **Employing entity:** Institut National de la Recherche Agronomique **Type of entity:** R&D Centre
Professional category: Postdoctoral research associate
Start-End date: 13/05/2013 - 31/08/2015 **Duration:** 2 years - 4 months

2 **Employing entity:** Massachusetts Institute of Technology **Type of entity:** University
Professional category: Postdoctoral research associate
Start-End date: 16/11/2009 - 30/04/2013 **Duration:** 3 years - 6 months

3 **Employing entity:** Max Planck Institute of Molecular Cell Biology and Genetics
Department: Image processing Facility
City employing entity: Dresden, Germany
Professional category: Consultant
Start-End date: 07/10/2009 - 07/11/2009 **Duration:** 1 month

4 **Employing entity:** University of Zurich (UZH) / Swiss Federation of Technology (ETH) **Type of entity:** University Research Institute
Department: Institute of Neuroinformatics
City employing entity: Zurich, Switzerland
Professional category: Research technician
Start-End date: 01/05/2009 - 30/09/2009 **Duration:** 5 months

Education

University education

1st and 2nd cycle studies and pre-Bologna degrees

University degree: Higher degree
Name of qualification: Graduado o Graduada en Ingeniería Informática
Degree awarding entity: Universidad Autónoma de Madrid **Type of entity:** University
Date of qualification: 29/07/2002

Doctorates

Doctorate programme: Programa Oficial de Doctorado en Ingeniería Informática y Telecomunicación
Degree awarding entity: Universidad Autónoma de Madrid **Type of entity:** University
Date of degree: 26/06/2009

Language skills

Language	Listening skills	Reading skills	Spoken interaction	Speaking skills	Writing skills
German	A2	A2	A2	A2	A2
Basque	B2	B2	B2	B2	B2
English	C1	C1	C1	C1	C1
French	C1	C1	C1	C1	C1
Spanish	C2	C2	C2	C2	C2

Teaching experience

General teaching experience

1 **Name of the course:** Computer Vision
University degree: Máster Universitario en Ingeniería Computacional y Sistemas Inteligentes
Start date: 26/11/2018 **End date:** 13/12/2018
End date: 13/12/2018
Entity: Universidad del País Vasco / Euskal Herriko Unibertsitatea **Type of entity:** University
Faculty, institute or centre: Facultad de Informática

2 **Name of the course:** Computer Vision
University degree: Máster Universitario en Ingeniería Computacional y Sistemas Inteligentes
Start date: 27/11/2017 **End date:** 19/12/2017
End date: 19/12/2017
Entity: Universidad del País Vasco / Euskal Herriko Unibertsitatea **Type of entity:** University
Faculty, institute or centre: Facultad de Informática

3 **Name of the course:** Computer Vision
University degree: Máster Universitario en Ingeniería Computacional y Sistemas Inteligentes
Start date: 29/11/2016 **End date:** 20/12/2016
End date: 20/12/2016
Entity: Universidad del País Vasco / Euskal Herriko Unibertsitatea **Type of entity:** University
Faculty, institute or centre: Facultad de Informática

4 **Name of the course:** Metodología y Tecnología de la Programación I
University degree: Graduado o Graduada en Ingeniería en Informática
Start date: 01/08/2007 **End date:** 01/01/2008
End date: 2007
Entity: Centro de Estudios Universitarios CEU SAN PABLO **Type of entity:** University Centres and Structures and Associated Bodies
Faculty, institute or centre: Escuela Politecnica Superior

5 **Name of the course:** Laboratorio de Estructura de Datos y de la Informacion 2
University degree: Licenciado en Informática
Start date: 10/2006 **End date:** 02/2007
End date: 2006
Entity: Universidad Autónoma de Madrid **Type of entity:** University
Faculty, institute or centre: Escuela Politécnica Superior

6 **Name of the course:** Laboratorio de Estructura de Datos y de la Informacion 1
University degree: Licenciado en Informática
Start date: 02/2003 **End date:** 06/2003
End date: 2003
Entity: Universidad Autónoma de Madrid **Type of entity:** University
Faculty, institute or centre: Escuela Politécnica Superior

Experience supervising doctoral thesis and/or final year projects

1 **Project title:** Detección de objetos basada en Deep Learning y aplicada a vehículos autónomos
Type of project: Master thesis
Co-director of thesis: Javier Yebes Torres
Entity: Universidad del País Vasco / Euskal Herriko Unibertsitatea **Type of entity:** University
Student: Ignacio Arriola Oregui
Obtained qualification: 10
Date of reading: 27/09/2018

2 **Project title:** Driver Drowsiness Detection in Facial Images
Type of project: Master thesis
Co-director of thesis: Fadi Dornaika
Entity: Universidad del País Vasco / Euskal Herriko Unibertsitatea **Type of entity:** University
Student: Jorge Reta Cárcamo
Obtained qualification: 9.75
Date of reading: 26/09/2018

3 **Project title:** Reconocimiento de señales de tráfico verticales mediante técnicas de visión artificial
Type of project: Master thesis
Entity: Universidad del País Vasco / Euskal Herriko Unibertsitatea **Type of entity:** University
Student: Olatz Iparraguirre Gil
Obtained qualification: 9.5
Date of reading: 12/09/2018

4 **Project title:** Statistical Shiny App that provides a complete performance evaluation of the MicroINR System
Type of project: Master thesis
Co-director of thesis: Itziar Irigoien
Entity: Universidad del País Vasco / Euskal Herriko Unibertsitatea **Type of entity:** University
Student: Imanol Zubizarreta
Obtained qualification: 10
Date of reading: 29/06/2018

5 **Project title:** Comparative Analysis of Facial Expressions using Hand-crafted and Deep Face Features
Type of project: Master thesis
Co-director of thesis: Fadi Dornaika
Entity: Universidad del País Vasco / Euskal Herriko Unibertsitatea **Type of entity:** University
Student: Leire Roa Barco
Obtained qualification: 8.5
Date of reading: 20/12/2017

6 **Project title:** Face Beauty Analysis via Manifold Based Semi-Supervised Learning
Type of project: Master thesis
Co-director of thesis: Fadi Dornaika
Entity: Universidad del País Vasco / Euskal Herriko Unibertsitatea **Type of entity:** University
Student: Anne Elorza Deias
Obtained qualification: 9
Date of reading: 27/09/2017

7 **Project title:** Prototipo CAD de segmentación automática de cáncer de pulmón en imágenes histopatológicas TMA
Type of project: Master thesis
Co-director of thesis: Carlos Ortiz de Solórzano Aurusa
Entity: Universidad del País Vasco / Euskal Herriko Unibertsitatea
Student: Jefferson Jair Arcos Erazo
Date of reading: 31/07/2017

8 **Project title:** Image-based Family Verification in the wild
Type of project: Master thesis
Co-director of thesis: Fadi Dornaika
Entity: Universidad del País Vasco / Euskal Herriko Unibertsitatea **Type of entity:** University
Student: Oscar Serradilla Casado
Obtained qualification: 10
Date of reading: 26/07/2017

9 **Project title:** Comparative Study of Human Age Estimation Based on Hand-crafted and Deep Face Features
Type of project: Master thesis
Co-director of thesis: Fadi Dornaika
Entity: Universidad del País Vasco / Euskal Herriko Unibertsitatea **Type of entity:** University
Student: Carlos Belver Mielgo
Date of reading: 30/09/2016

Healthcare experience

Other activities/achievements not included above

1 **Other relevant activities:** Instructor at the Introduction to Neuroinformatics course, Neuroinformatics 2015
Entity where project took place: Cairns, Australia **Type of entity:** Foundation
End date: 18/08/2015

2 **Other relevant activities:** Instructor at the Introduction to Neuroinformatics course, Neuroinformatics 2014
Entity where project took place: Leiden University, Leiden, Netherlands **Type of entity:** University
End date: 22/08/2014

3 **Other relevant activities:** Instructor at the Introduction to Neuroinformatics course, Neuroinformatics 2013
Entity where project took place: Karolinska Institute, Stockholm, Sweden
End date: 24/08/2013

4 **Other relevant activities:** Invited speaker to Janelia EM Connectomics workshop
Entity where project took place: HHMI's Janelia Farm Research Campus **Type of entity:** R&D Centre
City of entity: Ashburn, VA, United States of America
End date: 19/10/2012

5 **Other relevant activities:** Instructor at the Introduction to Neuroinformatics course, Neuroinformatics 2012
Entity where project took place: Technische Universität München **Type of entity:** University
End date: 07/09/2012

6 **Other relevant activities:** Invited speaker
Entity where project took place: Institute of bioengineering of Catalonia, IBEC **Type of entity:** R&D Centre

City of entity: Barcelona, Catalonia, Spain
End date: 04/05/2012

7 **Other relevant activities:** Organization of ISBI challenge: "Segmentation of neuronal structures in EM stacks"
Entity where project took place: International Symposium on Biomedical Imaging 2012 **Type of entity:** Associations and Groups
City of entity: Barcelona, Catalonia, Spain
End date: 02/05/2012

8 **Other relevant activities:** Invited speaker to Janelia image processing seminar
Entity where project took place: HHMI's Janelia Farm Research Campus **Type of entity:** R&D Centre
City of entity: Ashburn, VA, United States of America
End date: 03/12/2010

9 **Other relevant activities:** Invited speaker at Fiji hackathon
Entity where project took place: Laboratory for Optical and Computational Instrumentation
City of entity: Madison, WI, United States of America
End date: 2010

10 **Other relevant activities:** Tutor at the Image Processing School in Neuroinformatics 2009
Entity where project took place: 2nd INCF Congress of Neuroinformatics **Type of entity:** Associations and Groups
End date: 12/09/2009

11 **Other relevant activities:** Invited speaker at Fiji hackathon
Entity where project took place: European Molecular Biology Laboratory **Type of entity:** R&D Centre
City of entity: Heidelberg, Germany
End date: 2009

12 **Other relevant activities:** Invited speaker at Fiji hackathon
Entity where project took place: INI Institute of Neuroinformatics
City of entity: Zurich, Switzerland
End date: 2009

13 **Other relevant activities:** Invited speaker at Fiji hackathon
Entity where project took place: Max Planck Institute of Molecular Cell Biology and Genetics (MPI-CBG) **Type of entity:** R&D Centre
End date: 2009

14 **Other relevant activities:** Invited speaker at Janelia Farm Fiji hackathon
Entity where project took place: HHMI's Janelia Farm Research Campus **Type of entity:** R&D Centre
End date: 2008

Scientific and technological experience

Research and development groups/teams

Name of the group: Fiji
Aims of the group: Open-source platform for biomedical software
Type of collaboration: Co-authorship of projects and their development
Start date: 2008

Scientific or technological activities

R&D projects funded through competitive calls of public or private entities

1 **Name of the project:** TEFOR (Transgenesis for functional studies in model organisms)
Entity where project took place: INRA Versailles
City of entity: Versailles, Île de France, France
Name principal investigator (PI, Co-PI....): Joly Jean-Stéphane; Andrey Philippe
Funding entity or bodies:
ANR, Programme “Investissements d’Avenir”
Type of entity: Administrative Body of the National Health System

Start-End date: 01/07/2012 - 30/12/2019
Total amount: 12.500.000 €

2 **Name of the project:** Descifrando la estructura y la función de las protrusions celulares en la migración tridimensional
Type of project: Basic research (including archaeological digs, etc)
Entity where project took place: Universidad Carlos III de Madrid
Type of entity: University
City of entity: Getafe, Community of Madrid, Spain
Name principal investigator (PI, Co-PI....): Arrate Muñoz Barrutia; Denis Wirtz; Ignacio Arganda Carreras; Javier Pascau González-Garzón; María Victoria Gómez Gaviro; Eugenio Marinetto Carillo; Alejandro Suñé Auyón
Nº of researchers: 7
Funding entity or bodies:
Ministerio de Economía y Competitividad
Type of entity: State agency
City funding entity: Madrid, Community of Madrid, Spain

Start-End date: 01/01/2016 - 31/12/2016
Duration: 1 year
Participating entity/entities: FUNDACION IKERBASQUE/IKERBASQUE FUNDAZIOA
Total amount: 40.000 €

3 **Name of the project:** Hacia la proteomica visual: herramientas para el calculo y manejo de estructuras tridimensionales
Entity where project took place: Departamento de Informatica de la Universidad Autonoma de Madrid
Type of entity: University
City of entity: Cantoblanco, Community of Madrid, Spain

Name principal investigator (PI, Co-PI....): Marabini Roberto
Funding entity or bodies:
MINISTERIO DE EDUCACION Y CIENCIA
City funding entity: Spain

Start-End date: 2007 - 2009
Total amount: 91.960 €

4 **Name of the project:** Image Processing in Biological 3D Microscopy
Entity where project took place: Centro Nacional de Biotecnología (CSIC) **Type of entity:** R&D Centre
City of entity: Cantoblanco, Community of Madrid, Spain
Funding entity or bodies:
National Institute of Health **Type of entity:** Administrative Body of the National Health System
City funding entity: United States of America

Start-End date: 2001 - 2005
Total amount: 250.000 €

5 **Name of the project:** Characterization of Adult Stem Cell Involvement in Mammary Gland Development
Entity where project took place: Lawrence Berkeley National Laboratory (grant 366984)
City of entity: Berkeley, United States of America
Name principal investigator (PI, Co-PI....): Carlos Ortiz-de-Solorzano
Start-End date: 2002 - 2004
Total amount: 200.000 €

6 **Name of the project:** Three-dimensional Modeling of Breast Cancer Progression
Entity where project took place: University of California, Breast Cancer Research Program (grant 8WB-0150) **Type of entity:** University
City of entity: Berkeley, United States of America
Name principal investigator (PI, Co-PI....): Carlos Ortiz-de-Solorzano
Start-End date: 2002 - 2004
Total amount: 335.549 €

7 **Name of the project:** Reconstruction of mammary gland structure using three-dimensional computer based microscopy
City of entity: Berkeley, United States of America
Name principal investigator (PI, Co-PI....): Carlos Ortiz-de-Solorzano
Funding entity or bodies:
US Department of Defense, Breast Cancer Research Program **Type of entity:** State agency
City funding entity: United States of America

Start-End date: 2000 - 2003
Total amount: 385.639 €

R&D non-competitive contracts, agreements or projects with public or private entities

Name of the project: Elastic Image Registration - EIR
Type of project: Research and development, including transfer
Geographical area: Non EU International
Degree of contribution: Researcher
Entity where project took place: Andor Technology
Name principal investigator (PI, Co-PI....): Ignacio Arganda-Carreras; Arrate Munoz-Barrutia; Jan Kybic; Carlos Oscar Sanchez Sorzano
Nº of researchers: 4
Participating entity/entities: Andor Technology; Centro Nacional de Biotecnología; Czech Technical University; Universidad Autónoma de Madrid; Universidad de Navarra
Start date: 21/04/2010
Relevant results: Implementation of registration algorithm in commercial microscopy software

Scientific and technological activities

Scientific production

H index: 16
Date of application: 18/09/2018

Publications, scientific and technical documents

1 Olazabal-Herrero A; Sendino M; Arganda-Carreras I; Rodríguez JA. WDR20 regulates shuttling of the USP12 deubiquitinase complex between the plasma membrane, cytoplasm and nucleus.European Journal of Cell Biology. 98 - 1, pp. 12 - 26. 01/01/2019. ISSN 0171-9335
DOI: 10.1016/j.ejcb.2018.10.003
PMID: 30466959
Type of production: Scientific paper
Format: Journal

2 Malhan, Deeksha; Muelke, Matthias; Rosch, Sebastian; Schaefer, Annemarie B.; Merboth, Felix; Weisweiler, David; Heiss, Christian; Arganda-Carreras, Ignacio; El Khassawna, Thaqif. An Optimized Approach to Perform Bone Histomorphometry. Frontiers in Endocrinology. 9, 21/11/2018. ISSN 1664-2392
DOI: 10.3389/fendo.2018.00666
Type of production: Scientific paper

3 Dornaika F.; Arganda-Carreras I.; Belver C.Age estimation in facial images through transfer learning. Machine Vision and Applications. 20/09/2018. ISSN 09328092
DOI: 10.1007/s00138-018-0976-1
Type of production: Scientific paper
Format: Journal

4 Ignacio Arganda-Carreras; Tudor Manoliu; Nicolas Mazuras; Florian Schulze; Juan E Iglesias; Katja B{\"u}hler; Arnim Jenett; Fran{ç}ois Rouyer; Philippe Andrey. A Statistically Representative Atlas for Mapping Neuronal Circuits in the Drosophila Adult Brain. Frontiers in neuroinformatics. 12, pp. 13 - 13. Frontiers, 23/03/2018.
Type of production: Scientific paper
Format: Journal

5 Adrián Nuñez Marcos; Gorka Azkune; Ignacio Arganda Carreras. Vision-Based Fall Detection with Convolutional Neural Networks. Wireless Communications and Mobile Computing. 2017, pp. 1 - 16. Hindawi, 06/12/2017.
Type of production: Scientific paper **Format:** Journal

6 Nunez-Marcos, Adrian; Azkune, Gorka; Arganda-Carreras, Ignacio. Vision-Based Fall Detection with Convolutional Neural Networks. Wireless Communications and Mobile Computing. 06/12/2017. ISSN 1530-8669
DOI: 10.1155/2017/9474806
Type of production: Scientific paper
Source of citations: WOS **Citations:** 1

7 Ignacio Arganda-Carreras; Verena Kaynig; Curtis Rueden; Kevin W Eliceiri; Johannes Schindelin; Albert Cardona; H Sebastian Seung. Trainable Weka Segmentation: a machine learning tool for microscopy pixel classification. Bioinformatics. 33 - 15, pp. 2424 - 2426. Oxford University Press, 30/03/2017.
Type of production: Scientific paper **Format:** Journal
Corresponding author: Yes

8 Carlos Belver; Ignacio Arganda Carreras; Fadi Dornaika. Evaluating Age Estimation Using Deep Convolutional Neural Nets. Electronic Imaging. 2017 - 17, pp. 100 - 105. Society for Imaging Science and Technology, 29/01/2017.
Type of production: Scientific paper **Format:** Journal

9 David Legland; Ignacio Arganda Carreras; Philippe Andrey. MorphoLibJ: integrated library and plugins for mathematical morphology with ImageJ. Bioinformatics. pp. btw413. Oxford University Press, 13/07/2016.
Type of production: Scientific paper **Format:** Journal

10 Fadi Dornaika; Ammar Assoum; Abdelmalik Moujahid; Ignacio Arganda-Carreras. An Empirical Study of Global Descriptors for Image-based Localization in Dense Urban Scenes. International Journal of Sensors Wireless Communications and Control. 6 - 3, pp. 142 - 152. Bentham Science Publishers, 2016.
Type of production: Scientific paper **Format:** Journal

11 Ignacio Arganda-Carreras; Srinivas C Turaga; Daniel R Berger; Dan Ciresan; Alessandro Giusti; Luca Maria Gambardella; Jürgen Schmidhuber; Dmitry Laptev; Sarvesh Dwivedi; Joachim M Buhmann; Ting Liu; Mojtaba Seyedhosseini; Tolga Tasdizen; Lee Kamentsky; Radim Burget; Vaclav Uher; Xiao Tan; Cangming Sun; Tuan Pham; Erhan Bas; Mustafa Gokhan Uzunbas; Albert Cardona; Johannes Schindelin; H. Sebastian Seung. Crowdsourcing the creation of image segmentation algorithms for connectomics. Frontiers in Neuroanatomy. 9 - 142, 2015. Available on-line at: <http://www.frontiersin.org/neuroanatomy/10.3389/fnana.2015.00142/abstract>. ISSN 1662-5129
Type of production: Scientific paper **Format:** Journal

12 Yongsoo Kim; Kannan Umadevi Venkataraju; Kith Pradhan; Carolin Mende; Julian Taranda; Srinivas C Turaga; Ignacio Arganda-Carreras; Lydia Ng; Michael J Hawrylycz; Kathleen S Rockland; others. Mapping Social Behavior-Induced Brain Activation at Cellular Resolution in the Mouse. Cell reports. 10 - 2, pp. 292 - 305. Cell Press, 2015.
Type of production: Scientific paper **Format:** Journal

13 Javier Cabrera; Fernando E D{\'\i}az-Manzano; Marta Barcala; Ignacio Arganda-Carreras; Janice Almeida-Engler; Gilbert Engler; Carmen Fenoll; Carolina Escobar. Phenotyping nematode feeding sites: three-dimensional reconstruction and volumetric measurements of giant cells induced by root-knot nematodes in Arabidopsis. New Phytologist. 2015.
Type of production: Scientific paper **Format:** Journal

14 Nobuhiko Miyasaka; Ignacio Arganda Carreras; Noriko Wakisaka; Miwa Masuda; Uygar Sümbül; H Sebastian Seung; Yoshihiro Yoshihara. Olfactory projectome in the zebrafish forebrain revealed by genetic single-neuron labelling. Nature communications. 5, Nature Publishing Group, 09/04/2014.
Type of production: Scientific paper **Format:** Journal

15 Jaza Gul-Mohammed; Ignacio Arganda Carreras; Philippe Andrey; Vincent Galy; Thomas Boudier. A generic classification-based method for segmentation of nuclei in 3D images of early embryos. BMC bioinformatics. 15 - 1, BioMed Central Ltd, 14/01/2014.
Type of production: Scientific paper **Format:** Journal

16 Axel Poulet; Ignacio Arganda-Carreras; David Legland; Aline V Probst; Philippe Andrey; Christophe Tatout. NucleusJ: an ImageJ plugin for quantifying 3D images of interphase nuclei. Bioinformatics. 31 - 7, pp. 1144 - 1146. Oxford University Press, 2014.
Type of production: Scientific paper **Format:** Journal

17 Albert Cardona; Stephan Saalfeld; Johannes Schindelin; Ignacio Arganda-Carreras; Stephan Preibisch; Mark Longair; Pavel Tomancak; Volker Hartenstein; Rodney J. Douglas. TrakEM2 Software for Neural Circuit Reconstruction. PLoS ONE. 7 - 6, pp. e38011 - e38011. Public Library of Science, 19/06/2012. Available on-line at: <http://dx.doi.org/10.1371%2Fjournal.pone.0038011>.
Type of production: Scientific paper **Format:** Journal

18 Johannes Schindelin; Ignacio Arganda-Carreras; Erwin Frise; Verena Kaynig; Mark Longair; Tobias Pietzsch; Stephan Preibisch; Curtis Rueden; Stephan Saalfeld; Benjamin Schmid; Jean-Yves Tinevez; Daniel James White; Volker Hartenstein; Kevin Eliceiri; Pavel Tomancak; Albert Cardona. Fiji: an open-source platform for biological-image analysis. Nature Methods. 9, pp. 676 - □□682. 06/2012.
Type of production: Scientific paper **Format:** Journal

19 Timothy Ragan; Lolahon R. Kadiri; Kannan Umadevi Venkataraju; Karsten Bahlmann; Julian Taranda; Ignacio Arganda-Carreras; Jason Sutin; H. Sebastian Seung; Pavel Osten. Serial two-photon tomography: an automated method for ex-vivo mousebrain imaging. Nature Methods. 9 - 3, pp. 252 - 258. 01/2012. Available on-line at: <http://dx.doi.org/10.1038/nmeth.1854>.
Type of production: Scientific paper **Format:** Journal

20 Michael Doube; Michal M. Klosowski; Ignacio Arganda-Carreras; Fabrice P. Cordelieres; Robert P. Dougherty; Jonathan S. Jackson; Benjamin Schmid; John R. Hutchinson; Sandra J. Shefelbine. BoneJ: Free and extensible bone image analysis in ImageJ. BONE. 47 - 6, pp. 1076 - 1079. ELSEVIER SCIENCE INC, 12/2010. ISSN 8756-3282
Type of production: Scientific paper **Format:** Journal

21 Ignacio Arganda-Carreras; Rodrigo Fernandez-Gonzalez; Arrate Munoz-Barrutia; Carlos Ortiz-de-Solorzano. 3D Reconstruction of Histological Sections: Application to Mammary Gland Tissue. Microscopy Research and Technique. 73 - 11, pp. 1019 - 1029. 10/2010.
Type of production: Scientific paper **Format:** Journal

22 Albert Cardona; Stephan Saalfeld; Ignacio Arganda-Carreras; Wayne Pereanu; Johannes Schindelin; Volker Hartenstein. Identifying Neuronal Lineages of Drosophila by Sequence Analysisof Axon Tracts. Journal of Neuroscience. 30 - 22, pp. 7538 - 7553. SOC NEUROSCIENCE, 06/2010. ISSN 0270-6474
Type of production: Scientific paper **Format:** Journal

23 Ignacio Arganda-Carreras; Carlos O. S. Sorzano; Philippe Thevenaz; Arrate Munoz-Barrutia; Jan Kybic; Roberto Marabini; Jose Maria Carazo; Carlos Ortiz-de-Solorzano. Non-rigid consistent registration of 2D image sequences. Physics in Medicine and Biology. 55 - 20, pp. 6215 - 6215. 2010. Available on-line at: <http://stacks.iop.org/0031-9155/55/i=20/a=012>.
Type of production: Scientific paper **Format:** Journal

24 Carlos O. S. Sorzano; Ignacio Arganda-Carreras; Philippe Thevenaz; Ana Beloso; Gracia Morales; Israel Valdes; Carmen Perez-Garcia; Carmen Castillo; Elisa andUnser Michael Garrido. Elastic Image Registration of 2D gels for differential and repeatability studies. Proteomics. 8, pp. 62 - 65. 2008.
Type of production: Scientific paper **Format:** Journal

25 F Dornaika; F Khattar; J Reta; I Arganda-Carreras; M Hernandez; Y Ruichek. Image-Based Driver Drowsiness Detection. Lecture Notes on Computer Science. 11264, pp. 61 - 71. Springer, Cham, 19/01/2019. ISBN 978-3-030-12177-8
Type of production: Book chapter **Format:** Book

26 Ignacio Arganda-Carreras; Philippe Andrey. Designing Image Analysis Pipelines in Light Microscopy: A Rational Approach. Light Microscopy: Methods and Protocols. pp. 185 - 207. Springer New York, 22/03/2017.
Type of production: Book chapter **Format:** Book

Works submitted to national or international conferences

1 **Title of the work:** Driver Drowsiness Detection in Facial Images
Name of the conference: 2018 Eighth International Conference on Image Processing Theory, Tools and Applications (IPTA)
City of event: Xi'an, China
Date of event: 07/11/2018
End date: 11/11/2018
Organising entity: IEEE
Type of contribution: Scientific book or monograph
F Dornaika; J Reta; I Arganda-Carreras; A Moujahid. "2018 Eighth International Conference on Image Processing Theory, Tools and Applications (IPTA)". pp. 1 - 6. 2018. Available on-line at: <https://ieeexplore.ieee.org/abstract/document/8608130>. ISSN 2154-512X, ISBN 978-1-5386-6428-5

2 **Title of the work:** How Can Deep Neural Networks Be Generated Efficiently for Devices with Limited Resources?
Name of the conference: International Conference on Articulated Motion and Deformable Objects
City of event: Palma de Mallorca, Balearic Islands, Spain
Date of event: 12/07/2018
End date: 13/07/2018
Organising entity: The Mathematics and Computer Science Department of the UIB and the Spanish Association for Pattern Recognition and Image Analysis (AERFAI) **Type of entity:** University
Unai Elordi; Luis Unzueta; Ignacio Arganda Carreras; Oihana Otaegui. "How Can Deep Neural Networks Be Generated Efficiently for Devices with Limited Resources?". pp. 24 - 33. Springer, Cham, Available on-line at: <https://doi.org/10.1007/978-3-319-94544-6_3>. ISBN 978-3-319-94543-9

3 **Title of the work:** Multimodal Deep Learning for Advanced Driving Systems
Name of the conference: International Conference on Articulated Motion and Deformable Objects
City of event: Palma de Mallorca, Balearic Islands, Spain
Date of event: 12/07/2018
End date: 13/07/2018
Organising entity: The Mathematics and Computer Science Department of the UIB and the Spanish Association for Pattern Recognition and Image Analysis (AERFAI) **Type of entity:** University

Nerea Aranjuelo; Luis Unzueta; Ignacio Arganda Carreras; Oihana Otaegui. "How Can Deep Neural Networks Be Generated Efficiently for Devices with Limited Resources?". pp. 95 - 105. Springer, Cham, Available on-line at: <https://doi.org/10.1007/978-3-319-94544-6_10>. ISBN 978-3-319-94544-6

4 **Title of the work:** Group-Wise 3D Registration Based Templates to Study the Evolution of Ant Worker Neuroanatomy
Name of the conference: IEEE International Symposium on Biomedical Imaging
Corresponding author: Yes
City of event: Melbourne, Australia
Date of event: 20/04/2017
End date: 21/04/2017
Organising entity: IEEE **Type of entity:** Associations and Groups
City organizing entity: United States of America
Ignacio Arganda Carreras; Darcy Gordon; Sara Arganda Carreras; Maxime Beaudoin; James Traniello. "Group-Wise 3D Registration Based Templates to Study the Evolution of Ant Worker Neuroanatomy".

5 **Title of the work:** Comparative Study of Human Age Estimation Based on Hand-Crafted and Deep Face Features
Name of the conference: International Workshop on Face and Facial Expression Recognition from Real World Videos
City of event: Cancun, Mexico
Date of event: 04/12/2016
Organising entity: Springer
Type of contribution: Scientific book or monograph
C Belver; I Arganda-Carreras; Fadi Dornaika. "International Workshop on Face and Facial Expression Recognition from Real World Videos". pp. 98 - 112. 2016.

6 **Title of the work:** Numerical evaluation of whole Drosophila adult brain templates: a group-wise atlas solution
Name of the conference: EFOR Annual Meeting 2016
Corresponding author: Yes
City of event: Paris, Île de France, France
Date of event: 07/03/2016
End date: 08/03/2016
Organising entity: EFOR **Type of entity:** Foundation
Ignacio Arganda; Tudor Manoliu; Juan Eugenio Iglesias; Arnim Jenett; François Rouyer; Philippe Andrey. "Numerical evaluation of whole Drosophila adult brain templates: a group-wise atlas solution".

7 **Title of the work:** Construction and evaluation of statistical atlases of Drosophila adult brains
Name of the conference: 16eme Rencontre du Club de Neurobiologie des Invertebrés
Corresponding author: Yes
City of event: Gif-sur-Yvette, France
Date of event: 11/06/2015
End date: 12/06/2015
Organising entity: Institut des Neurosciences Paris-Saclay (Neuro-PSI)
City organizing entity: Paris, France
Ignacio Arganda Carreras; Manoliu Tudor; Juan Eugenio Iglesias; Arnim Jenett; François Rouyer; Andrey Philippe. "Construction and evaluation of statistical atlases of Drosophila adult brains".

8 **Title of the work:** Group-wise registration methods to construct statistical atlases of Drosophila adult brains
Name of the conference: VIB Bioimage Informatics
Corresponding author: Yes

City of event: Leuven, Belgium
Date of event: 08/10/2014
End date: 10/10/2014
Organising entity: VIB **Type of entity:** Innovation and Technology Centres
City organizing entity: Flanders, Belgium
Ignacio Arganda Carreras; Tudor Manoliu; Juan Eugenio Iglesias; Arnim Jenett; François Rouyer; Philippe Andrey. "Group-wise registration methods to construct statistical atlases of Drosophila adult brains".

9 **Title of the work:** ISBI challenge: "3D Segmentation of Neurites in EM Images"
Name of the conference: IEEE International Symposium on Biomedical Imaging
Corresponding author: Yes
City of event: San Francisco, CA, United States of America
Date of event: 07/04/2013
End date: 08/04/2013
Organising entity: Institute of Electrical and Electronics Engineers **Type of entity:** Foundation
City organizing entity: New York City, United States of America
Ignacio Arganda Carreras; Ashwin Vishwanathan; Daniel R. Berger; H. Sebastian Seung. "ISBI challenge: "3D Segmentation of Neurites in EM Images"".

10 **Title of the work:** STP tomography-based mapping of the complete brain circuit mediating social behavior in the mouse
Name of the conference: Neuroscience 2012
City of event: New Orleans, United States of America
Date of event: 13/11/2012
End date: 17/11/2012
Organising entity: Society for Neuroscience **Type of entity:** Associations and Groups
City organizing entity: United States of America
Yongsoo Kim; Kannan Umadevi Venkataraju; Kith Pradhan; Srinivas C. Turaga; Ignacio Arganda-Carreras; Lydia Ng; Michael J. Hawrylycz; Sebastian H. Seung; Pavel Osten. "STP tomography-based mapping of the complete brain circuit mediating social behavior in the mouse".

11 **Title of the work:** EM segmentation challenge
Name of the conference: Scaling up EM connectomics
Corresponding author: Yes
City of event: Ashburn, VA, United States of America
Date of event: 11/11/2012
End date: 11/11/2012
Organising entity: Howard Hughes Medical Institute **Type of entity:** Foundation
Ignacio Arganda Carreras. "EM segmentation challenge".

12 **Title of the work:** ISBI challenge: "Segmentation of neuronal structures in EM stacks"
Name of the conference: IEEE International Symposium on Biomedical Imaging
Corresponding author: Yes
City of event: Barcelona, Catalonia, Spain
Date of event: 01/05/2012
End date: 02/05/2012
Organising entity: Institute of Electrical and Electronics Engineers **Type of entity:** Foundation
City organizing entity: New York City, United States of America
Ignacio Arganda Carreras; Albert Cardona; Johannes Schindelin; H. Sebastian Seung. "ISBI challenge: "Segmentation of neuronal structures in EM stacks"".

13 **Title of the work:** Machine learning-based cell counting in the mouse brain using serial two-photon tomography
Name of the conference: Neuroscience 2011
City of event: Washington DC, United States of America
Date of event: 12/11/2011
End date: 16/11/2011
Organising entity: Society for Neuroscience **Type of entity:** Associations and Groups
City organizing entity: United States of America
Kannan Umadevi Venkataraju; Ignacio Arganda-Carreras; Keerthi Krishnan; Z. Josh Huang; Sebastian H. Seung; Pavel Osten. "Machine learning-based cell counting in the mouse brain using serial two-photon tomography".

14 **Title of the work:** Quantitative mapping of neural circuits in the mouse brain using serial two-photon tomography
Name of the conference: Neuroscience 2011
City of event: Washington DC, United States of America
Date of event: 12/11/2011
End date: 16/11/2011
Organising entity: Society for Neuroscience **Type of entity:** Associations and Groups
City organizing entity: United States of America
Kannan Umadevi Venkataraju; Ignacio Arganda-Carreras; Lolahon R. Kadiri; Naoki Takada; Sebastian H. Seung; Pavel Osten. "Quantitative mapping of neural circuits in the mouse brain using serial two-photon tomography".

15 **Title of the work:** 3D-2P microscopy of c-fos expression: A high-throughput method to study neural circuit functions in the mouse brain
Name of the conference: 40th annual meeting Neuroscience 2010
City of event: San Diego, United States of America
Date of event: 13/11/2010
End date: 17/11/2010
Organising entity: Society for Neuroscience **Type of entity:** Associations and Groups
City organizing entity: United States of America
Kannan Umadevi Venkataraju; Ignacio Arganda-Carreras; Julian Taranda; Yongsoo Kim; Karsten Bahlmann; Timothy Ragan; Sebastian H. Seung; Pavel Osten. "3D-2P microscopy of c-fos expression: A high-throughput method to study neural circuit functions in the mouse brain".

16 **Title of the work:** Three-dimensional two-photon (3D-2P) microscopy for fluorescent mouse brain
Name of the conference: 40th annual meeting Neuroscience 2010
City of event: San Diego, United States of America
Date of event: 13/11/2010
End date: 17/11/2010
Organising entity: Society for Neuroscience **Type of entity:** Associations and Groups
City organizing entity: United States of America
Karsten Bahlmann; Timothy Ragan; Ignacio Arganda-Carreras; Kannan Umadevi Venkataraju; Julian Taranda; Lolahon R. Kadiri; Sebastian H. Seung; Pavel Osten. "Three-dimensional two-photon (3D-2P) microscopy for fluorescent mouse brain".

17 **Title of the work:** Automatic Consistent Registration Framework for temporal pairs of mamogram: In application to breast cancer risk assessment due to HRT (Hormone Replacement Therapy)
Name of the conference: 11th International Workshop on Computer-Aided Diagnosis
City of event: Berlin, Germany

Date of event: 24/06/2009
End date: 27/06/2009
Gopal Karemore; Ignacio Arganda-Carreras; Nielsen Mads. "Automatic Consistent Registration Framework for temporal pairs of mamogram: In application to breast cancer risk assessment due to HRT (Hormone Replacement Therapy)".

18 **Title of the work:** bUnwarpJ: Consistent and Elastic Registration in ImageJ. Methods and Applications.
Name of the conference: ImageJ User & Developer Conference
City of event: Luxembourg, Luxembourg
Date of event: 06/11/2008
End date: 07/11/2008
Organising entity: Centre de Recherche Public Henri Tudor **Type of entity:** University Research Institute
City organizing entity: Luxembourg, Luxembourg
Ignacio Arganda-Carreras; Carlos Ortiz-de-Solorzano; Jan Kybic. "bUnwarpJ: Consistent and Elastic Registration in ImageJ. Methods and Applications.".

19 **Title of the work:** Consistent and elastic registration of histological sections using vector-spline regularization
Name of the conference: Computer Vision Approaches to Medical Image Analysis
City of event: Graz, Austria
Date of event: 12/05/2006
End date: 12/05/2006
Ignacio Arganda-Carreras; Carlos O. S. Sorzano; Roberto Marabini; Jose Maria Carazo; Carlos Ortiz-de-Solorzano; Jan Kybic. "Consistent and elastic registration of histological sections using vector-spline regularization".

20 **Title of the work:** Skeleton-based 3D Reconstruction Of Histological Sections
Name of the conference: MediVis05, Biomedical Visualization
City of event: London, United Kingdom
Date of event: 06/07/2005
End date: 08/07/2005
Ignacio Arganda-Carreras; Carlos O. S. Sorzano; Roberto Marabini; Jose Maria Carazo; Carlos Carlos Ortiz-de-Solorzano. "Skeleton-based 3D Reconstruction Of Histological Sections".

21 **Title of the work:** Automatic registration of serial mammary gland sections
Name of the conference: Engineering in Medicine and Biology Society, 2004. IEMBS '04
City of event: San Francisco, United States of America
Date of event: 01/09/2004
End date: 05/09/2004
Ignacio Arganda-Carreras; Rodrigo Fernandez-Gonzalez; Carlos Ortiz-de-Solorzano. "Automatic registration of serial mammary gland sections".

22 **Title of the work:** Automatic registration of mammary gland section images
Name of the conference: First International Meeting on Applied Physics (APHYS2003)
City of event: Badajoz, Extremadura, Spain
Date of event: 13/10/2003
End date: 18/10/2003
Ignacio Arganda-Carreras; Rodrigo Fernandez-Gonzalez; Carlos Ortiz-de-Solorzano. "Automatic registration of mammary gland section images".

R&D management and participation in scientific committees

Scientific, technical and/or assessment committees

Committee title: Bio Imaging and Signal Processing Technical Committee
Primary (UNESCO code): 330000 - Technological Science.
Secondary (UNESCO code): 240000 - Life Science
Affiliation entity: IEEE
Start-End date: 01/01/2017 - 31/12/2019

Other achievements

Stays in public or private R&D centres

1 **Entity:** Universidad de Navarra **Type of entity:** University
Faculty, institute or centre: Centro de Investigacion Medica Aplicada
City of entity: Navarra, Foral Community of Navarre, Spain
Start-End date: 02/07/2006 - 22/09/2006 **Duration:** 3 months
Goals of the stay: Doctorate

2 **Entity:** Centre for Machine Perception **Type of entity:** University
Faculty, institute or centre: Czech Technical University
City of entity: Praga, Praha, Czech Republic
Start-End date: 22/07/2005 - 16/10/2005 **Duration:** 3 months
Goals of the stay: Doctorate

3 **Entity:** Lawrence Berkeley National Laboratory **Type of entity:** University Research Institute
City of entity: Berkeley, United States of America
Start-End date: 18/09/2002 - 08/09/2004 **Duration:** 13 months
Goals of the stay: Doctorate

Obtained grants and scholarships

1 **Name of the grant:** Beca de Formacion de Personal Investigador FPI-CAM
Aims: Pre-doctoral
Awarding entity: Comunidad de Madrid **Type of entity:** Comunidad autonoma
Conferral date: 01/10/2003 **Duration:** 4 years
End date: 30/09/2007

2 **Name of the grant:** Ayuda para estudiantes de tercer ciclo de la UAM
Aims: Research project for last year students
Awarding entity: Universidad Autónoma de Madrid **Type of entity:** University
Conferral date: 01/10/2001 **Duration:** 9 months
End date: 30/06/2002

Prizes, mentions and distinctions

1 **Description:** Doctor Europeus mention
Awarding entity: Universidad Autónoma de Madrid **Type of entity:** University
Conferral date: 26/06/2009

2 **Description:** Premio Extraordinario de Doctorado
Awarding entity: Universidad Autónoma de Madrid **Type of entity:** University
Conferral date: 26/06/2009