Marwan Abdellah

Curriculum Vitæ

PERSONAL STATEMENT

Motivated, talented and innovative researcher and software engineer with solid experience in three-dimensional modeling, large-scale visualization, physically-based rendering and high performance computing, all applied to computational neuroscience and biology. This comes with a proven track record in innovating and adapting research ideas and transferring them into efficient, scalable and open source software solutions with powerful applications in industry and academia. More than 10 years of experience in scientific visualization as a researcher, three-dimensional media designer and software engineer. PhD in Neuroscience from the Blue Brain Project at the Swiss Federal Institute of Technology (EPFL) with ambitions to reconstruct and simulate the mammalian brain.

EDUCATION

09.2012 — 09.2017

PH.D. · IN SILICO NEUROSCIENCE
Blue Brain Project · *Neuroscience Doctoral School* · *École Polytechnique Fédéral de Lausanne (EPFL)*
Lausanne · Switzerland
THESIS — *In Silico Brain Imaging*
RESEARCH SCOPE — *Bio-physically-based rendering and visualization of complex brain tissue models using computational modeling and simulation of optical microscopes.*
ADVISORS — *Henry Markram* · *Felix Schürmann*
MENTORS — *Ahmet Bilgili* · *Stefan Eilemann* · *Jean-Philippe Thiran*

09.2009 — 05.2012

M.SC. · BIOMEDICAL ENGINEERING
Systems & Biomedical Engineering Department · *School of Engineering* · *Cairo University*
Cairo · Egypt
THESIS — *High Performance Fourier Volume Rendering on Graphics Processing Units (GPUs)*
RESEARCH SCOPE — *Accelerating the generation of digitally-reconstructed radiographs (DRRs) on GPUs using Fourier slice theorem and frequency domain volume rendering.*
ADVISORS — *Ayman Eldeib* · *Amr Sharawi*

09.2004 — 05.2009

B.SC. · BIOMEDICAL ENGINEERING
Systems & Biomedical Engineering Department · *School of Engineering* · *Cairo University*
Cairo · Egypt
THESIS — *Software Development for Low Cost, High quality, Real-time, 4D Ultrasound on Personal Computers*
PROJECT SCOPE — *Investigating various rendering algorithms for accelerating 4D Ultrasound volume reconstruction on GPUs.*
ADVISOR — *Yasser Kadah*

EXPERIENCE & EMPLOYMENT HISTORY

07.2011 – Present

SCIENTIFIC VISUALIZATION ENGINEER · DOCTORAL ASSISTANT · POST-DOCTROAL FELLOW
Blue Brain Project · *École Polytechnique Fédéral de Lausanne (EPFL)*
Lausanne & Geneva · Switzerland
ROLE — *High performance and distributed visualization, automated visualization workflows, and multimedia generation for neuroscientific data.*
DIRECTOR — *Henry Markram* · PROJECT MANAGER & CO-DIRECTOR — *Felix Schürmann*
LEADS — *Stefan Eilemann* · *Samuel Lapere*

01.2013 – 10.2013

SOFTWARE ENGINEER
EPFL
Lausanne · Switzerland
ROLE — *Building automated grading and systematic evaluation workflows for C++ and JAVA courses offered by*

EPFL on Coursera.
Instructors — *Jean-Cédric Chappelier · Vincent Lepetit · Jamila Sam*

07.2010 – 04.2011
Research Intern
SCI-STI-MM Multimedia Group · École Polytechnique Fédéral de Lausanne (EPFL)
Lausanne · Switzerland
Role — *Pursuing a research on H.264 and re-configurable video coding.*
Lab Director — *Marco Mattavilli*

03.2010 – 07.2010
Associate Biomedical Software Engineer
Biomedical Group · Symbyo Technologies (360imaging)
Cairo · Egypt
Role — *Development of dental implant software.*

07.2009 – 07.2010
Instructor
National Institute of Laser Advanced Sciences (NILES) · Cairo University
Cairo · Egypt
Role — *Instructing different topics of visualization and high performance computing.*

09.2009 – 02.2010
Biomedical Software Engineer
Research and Development Team · International Biomedical Engineering (IBE) Technologies
Cairo · Egypt
Role — *Development of 4D ultrasound reconstruction software.*

01.2005 – 09.2010
Freelancer
Web design

Research & Development Interests

Visualization	*Scientific visualization · High performance, distributed, and scalable volume rendering · Transfer function design*
Rendering	*Physically-based Monte Carlo rendering · Rendering fluorescence materials with highly scattering heterogeneous media*
In Silico Neuroscience	*Physically-plausible simulation of different microscopic imaging techniques of the cortical brain tissue using digital reconstructions of 3D neuronal models including brightfield, fluorescence and light sheet microscopes*
HPC	*GPU computing (GPGPU) with CUDA · Heterogeneous computing with OpenCL · Parallel and distributed computing with OpenMP and sockets*
Computational Geometry	*Reconstruction of high fidelity polygonal meshes that can accurately represent the surface of neuronal morphologies extracted from optical microscopy stacks*
Medical Imaging	*High quality and high performance 3D/4D real-time volume reconstruction for medical data (CT, MRI and Ultrasound) · Digitally reconstructed radiograph generation with k-space volume rendering*

Selected Projects

2018 — Present
Reconstruction of High Fidelity Polygonal Mesh Models of Neuroscientific Data
Reconstruction of accurate and watertight mesh models of neuroscientific structures including neurons, glial cells and blood vessels from point clouds acquired from optical microscopes and non-watertight meshes or volumetric stacks obtained by electron microscopes.

2016 — Present
Physically-plausible Reconstruction of Volumetric Models of Neuronal Morphologies
Automated reconstruction of accurate volumetric models of neocortical neuronal morphologies obtained from optical microscopes.

2015 — 2016
Parallel Rendering of Large Scale Volumes on Distributed Heterogeneous Computing Platforms

OpenCL-based, distributed rendering engine for visualizing large scale volumes on parallel multi-GPU remote machines.

2015 — 2016 **Physically-based Rendering of Highly Scattering Fluorescent Brain Models**
A novel rendering model for simulating light interaction with highly scattering fluorescent models based on a physically-plausible basis.

2013 — Present **Simulation of Optical Microscopy with Monte Carlo Rendering**
Simulation of the imaging pipelines in multiple optical microscopy techniques including brightfield and light sheet fluorescence microscopy.

OPEN SOURCE CONTRIBUTIONS

2016 — Present **Ultraliser**
High performance large scale mesh and volume reconstruction for neuroscientific models.

2019 — Present **VessMorphoVis**
A Blender-based add-on for visual analysis of digital reconstructions of blood vessels morphological skeletons. The add-on is used to visualize, analyze large-scale vasculature graphs and create polygonal meshes and high quality renderings using Cycles.

2016 — Present **NeuroMorphoVis**
An interactive, extensible and cross-platform framework for building, visualizing and analyzing digital reconstructions of neuronal morphology skeletons extracted from microscopy stacks. The framework is capable of detecting, repairing tracing artifacts and generating high fidelity surface meshes and high resolution volumetric models for simulation and in silico imaging studies.

2015 — 2016 **Livre**
Large scale interactive parallel volume rendering engine.

2011 — 2015 **The Neocortical Microcircuit Collaboration Portal**
This portal provides an online public resource of the Blue Brain Project's first release of a digital reconstruction of the microcircuitry of juvenile Rat somatosensory cortex, access to experimental data sets used in the reconstruction, and the resulting models.

2011 — 2012 **Equalizer**
Equalizer is the standard middleware to create and deploy parallel OpenGL-based applications.

2012 **The Portable Hardware Locality (HWLOC)**
This software package provides a portable abstraction of the hierarchical topology of modern architectures, including NUMA memory nodes, sockets, shared caches, cores and simultaneous multithreading.

HONORS & AWARDS

July 2020 **International Society for Computational Biology (ISCB) Award**
Brain Vasculature - ISCB Art in Science Competition · Third Place.

September 2019 **Ken Brodlie Prize · Eurographics UK Chapter**
Best Paper Award at CGVC 2019 · Generating High Fidelity Surface Meshes of Neocortical Neurons using Skin Modifiers

August 2019 **People's Choice Award from NeuroArt MBF Neuroscience**
USD 250.0 · The Neocortical Network

July 2019 **International Society for Computational Biology (ISCB) Award**

Inside the Neocortex - ISCB Art in Science Competition · Honorable Mention.

July 2018 — International Society for Computational Biology (ISCB) Award
In Silico Brainbow - ISCB Art in Science Competition · Third Place.

October 2017 — École Polytechnique Fédéral de Lausanne (EPFL) Prime Speciale
1000.0 CHF

January 2010 — ITIDA Graduation Project Award
My graduation project was awarded the first place in 2009 from the Minsters of Higher Education and Tele-Communication in Egypt during a celebration that was organized by ITIDA.

June 2010 — NVIDIA Award · ICTP Summer School on HPC and Grid Computing
NVIDIA GeForce GTX 9800 GPU awarded as a prize for accelerating ultrasound volume rendering application in ICTP.

July 2009 — Distinction with Honor · B.Sc. Biomedical Engineering
Systems & Biomedical Engineering Department · Faculty of Engineering · Cairo University

GRANTS & FELLOWSHIPS

July 2020 — ISMB Fellowship
Intelligent Systems for Molecular Biology (ISMB) Fellowship Award 2020 of the International Society of Computational Biology (ISCB).

June 2018 — ISMB Fellowship
Travel award of USD 1000 to attend the Conference on Intelligent Systems for Molecular Biology (ISMB) in Chicago, USA.

September 2012 — Ph.D. Fellowship
Fully funded Ph.D. fellowship from the Blue Brain Project · École Polytechnique Fédéral de Lausanne (EPFL).

January 2011 — ICTP Grant
Travel award to attend the Advanced Workshop in High Performance Computing & Grid Computing in the International Center for Theoretical Physics (ICTP) in Trieste, Italy.

August 2009 — ICTP Grant
Travel award to attend the Advanced Workshop in High Performance Computing in the International Center for Theoretical Physics (ICTP) in Trieste, Italy.

January 2009 — ITIDA/ITAC Grant
Grant of USD 2000 from ITAC to support my graduation project.

TECHNICAL

Programming	*C/C++ · Python · Unix Shell · OOP · Design Patterns · TDD*
Libraries	*STL · Boost · Qt*
Visualization & CG	*OpenGL · Open Inventor · OpenSceneGraph · VTK · XIP · NVIDIA Cg · GLSL*
Rendering	*PBRT · LuxRender · Mitsuba*
HPC	*CUDA · OpenCL · OpenMP · SLURM*
Web Development	*HTML · CSS · JavaScript · React*
Software Process	*Agile · Scrum · Bamboo · Jira · Jenkins*
Scientific Packages	*MATLAB · Octave · Vensim*
3D Graphics	*Blender (scripting with Python) · Maya (including MEL scripting) · 3DSMax*

Design & Web	*Gimp · Adobe Photoshop · Adobe Illustrator · Adobe After Effects · Adobe Muse*
Typography	*LaTeX · Lyx · Microsoft Office*
Others	*Git · SVN · Doxygen*

PROFESSIONAL ACTIVITIES

PROFESSIONAL MEMBERSHIPS

01.2010 — Present MEMBER
Institute of Electrical and Electronic Engineers (IEEE)

01.2010 — Present MEMBER
IEEE Engineering in Medicine and Biology Society (EMBS)

02.2015 — Present MEMBER
IEEE Engineering Computer Society

04.2015 — Present MEMBER
The European Association of Computer Graphics (Eurographics)

05.2015 — Present MEMBER
International Society for Computational Biology (ISCB)

CLASSES & TEACHING

Spring 2014 NUMERICAL ANALYSIS · MATH–251
Spring 2013 *Life Sciences School* · 4^{th} *Bachelor semester*
École Polytechnique Fédéral de Lausanne (EPFL)
TOPICS — *Stability, condition number and convergence of numerical methods · Polynomial interpolation and least squares approximation · Numerical integration · Direct methods for the solution of linear systems · Iterative methods for the solution of linear and nonlinear systems · Numerical approximation of ordinary differential equations · Introduction to MATLAB and Octave*
LECTURER — *Simone Deparis*

July 2010 HIGH PERFORMANCE COMPUTING
National Institute of Laser Advanced Sciences (NILES)
TOPICS — *Basic theory of HPC topics like Amdahl's law, speed up, UMA and NUMA architectures · GPU architecture · CUDA · Parallel algorithms*

October 2009 COMPUTER GRAPHICS & VISUALIZATION
National Institute of Laser Advanced Sciences (NILES)
TOPICS — *OpenGL Pipeline · Surface rendering · Graphics Modeling using 3D Studio Max*

REVIEWER

May 2021 STAR PROTOCOLS: CELL PRESS
February 2021 IEEE TRANSACTIONS ON VISUALIZATION AND COMPUTER GRAPHICS
February 2020 FRONTIERS IN NEUROSCIENCE
July 2019 JOURNAL OF ELECTRONIC IMAGING (SPIE)
February 2019 IEEE TRANSACTIONS ON BIOMEDICAL ENGINEERING
December 2018 IEEE TRANSACTIONS ON COMPUTATIONAL IMAGING
April 2018 JOURNAL OF ELECTRONIC IMAGING (SPIE)
February 2018 BMC BIOINFORMATICS
January 2018 JOURNAL OF ELECTRONIC IMAGING (SPIE)
February 2017 JOURNAL OF MEDICAL IMAGING (SPIE)
May 2016 JOURNAL OF ELECTRONIC IMAGING (SPIE)

March 2016	Eurographics Symposium on Parallel Graphics & Visualization (EGPGV) 2016
January 2016	SoftwareX (Elsevier)
August 2015	Design Automation for Embedded Systems
July 2015	Computer Graphics Forum
March 2015	Eurographics Symposium on Parallel Graphics & Visualization (EGPGV) 2015
January 2014	Journal of Medical Imaging & Health Informatics
August 2012	IEEE, Cairo International Biomedical Engineering Conference (CIBEC) 2012

attended events, conferences & workshops

October 2019	Blender Conference (BCON) 2019 (Scientific Visualization Panel) *Amsterdam · Netherlands*
September 2019	Eurographics Computer Graphics & Visual Computing (CGVC) 2019 (Session Chair) *Bangor · Wales · UK*
July 2019	Biological Data Visualization (BioVis 2019) at ISMB ECCB 2019 *Basel · Switzerland*
July 2018	8th Workshop on Biological Data Visualization (BioVis 2018) at ISMB 2018 *Chicago IL · USA*
March 2018	The 9th international meeting on Visualizing Biological Data (VIZBI 2018) *Boston · Cambridge MA · USA*
October 2017	The Human Brain Project Summit *Glasgow · Scotland · UK*
July 2017	7th Workshop on Biological Data Visualization (BioVis 2017) at ISMB 2017 *Prague · Czechia*
October 2016	6th Workshop on Biological Data Visualization (BioVis 2016) at IEEE VIS 2016 *Baltimore · MD · USA*
May 2016	The Brain Forum *Lausanne · Switzerland*
May 2016	Eurographics 2016 *Lisbon · Portugal*
April 2016	37th International Symposium on Biomedical Imaging: From Nano to Macro (ISBI 2016) *Prague · Czech Republic*
October 2015	The Second Biomedical Engineering Workshop (Organizer) *Systems & Biomedical Engineering Department · School of Engineering · Cairo University · Cairo · Egypt*
October 2015	The 2nd IEEE EMBS International Students Conference (Keynote) *Cairo · Egypt*
September 2015	The Human Brain Project Summit *Madrid · Spain*
August 2015	37th International Conference of the IEEE EMB Society (EMBC 2015) *Milan · Italy*
July 2015	5th Symposium on Biological Data Visualization (BioVis 2015) at ISMB/ECCB 2015 *Dublin · Ireland*
May 2015	Eurographics 2015 *Zürich · Switzerland*
March 2015	The Brain Forum *Lausanne · Switzerland*
December 2014	IEEE, 7th Cairo International Biomedical Engineering Conference (CIBEC 2014) *Cairo · Egypt*
December 2013	The Brain Forum *Jeddah · The Kingdom of Saudi Arabia*

October 2013 — The Human Brain Project Summit
École Polytechnique Fédéral de Lausanne (EPFL) · *Lausanne* · *Switzerland*

December 2012 — The First Biomedical Engineering Workshop (Organizer)
Biomedical Engineering Department · *School of Engineering* · *Cairo University* · *Cairo* · *Egypt*

December 2012 — IEEE, 6th Cairo International Biomedical Engineering Conference (CIBEC 2012)
Cairo · *Egypt*

November 2012 — Brain Mind Institute (BMI) Retreat Meeting
Bex · *VD* · *Switzerland*

April 2011 — Advanced School in High Performance Computing & Grid Computing
International Center for Theoretical Physics (ICTP) · *Trieste* · *Italy*

November 2009 — Advanced School in High Performance Computing
International Center for Theoretical Physics (ICTP) · *Trieste* · *Italy*

November 2009 — IEEE, International Conference of Image Processing (ICIP 2009)
Cairo · *Egypt*

March 2009 — URSI, 26th National Radio Science Conference (NRSC)
Cairo · *Egypt*

December 2008 — IEEE, 4th Cairo International Biomedical Engineering Conference (CIBEC 2008)
Cairo · *Egypt*

OTHER INFORMATION

PERSONAL

Residence — Permit B · *Lausanne* · *Switzerland*

Address — *Campus Biotech* · *Chemin des Mines, 9* · *Geneva* · *CH-1202* · *Switzerland*

HomePage — *www.marwan-abdellah.com*

Emails — *abdellah.marwan@gmail.com* · *marwan.m.abdellah@ieee.org* · *marwan.abdellah@epfl.ch*

Languages — English — *Fluent* · French — *Very Good (B1/B2 Berlitz)*
Italian · Spanish · German — *Learning*
Arabic — *Mother-tongue*

PUBLICATIONS

PEER-REVIEWED JOURNAL ARTICLES

In press

1. IN SILICO VOLTAGE-SENSITIVE DYE IMAGING REVEALS THE EMERGENT DYNAMICS OF CORTICAL POPULATIONS
Nature Communications
AUTHORS — *Taylor H. Newton, Michael W. Reimann, **Marwan Abdellah**, Grigori Chevtchenko, Eilif B. Muller and Henry Markram*

In press

2. METABALL SKINNING OF SYNTHETIC ASTROGLIAL MORPHOLOGIES INTO REALISTIC MESH MODELS FOR VISUAL ANALYTICS AND IN SILICO SIMULATIONS
Oxford Bioinformatics
AUTHORS — ***Marwan Abdellah**, Alessandro Foni, Eleftherios Zisis, Nadir Román Guerrero, Samuel Lapere, Jay S. Coggan, Daniel Keller, Henry Markram, and Felix Schürmann*

July 2020

3. INTERACTIVE VISUALIZATION AND ANALYSIS OF MORPHOLOGICAL SKELETONS OF BRAIN VASCULATURE NETWORKS WITH VESSMORPHOVIS
Oxford Bioinformatics
AUTHORS — ***Marwan Abdellah**, Nadir Román Guerrero, Samuel Lapere, Jay S. Coggan, Daniel Keller, Benoit Coste, Snigdha Dagaer, Jean-Denis Courcol, Henry Markram, and Felix Schürmann*

January 2019

4. OBJECTIVE MORPHOLOGICAL CLASSIFICATION OF NEOCORTICAL PYRAMIDAL CELLS
Oxford Cerebral Cortex
AUTHORS — *Lida Kanari, Srikanth Ramaswamy, Ying Shi, Sebastien Morand, Julie Meystre, Rodrigo Perin , **Marwan Abdellah**, Yun Wang, Kathryn Hess and Henry Markram*

September 2018

5. A PROCESS FOR DIGITIZING AND SIMULATING BIOLOGICALLY REALISTIC OLIGOCELLULAR NETWORKS DEMONSTRATED FOR THE NEURO-GLIO-VASCULAR ENSEMBLE
Frontiers in Neuroscience
AUTHORS — *Jay S. Coggan, Corrado Cali, Daniel Keller, Marco Agus, Daniya Boges, **Marwan Abdellah**, Kalpana Kare, Heikki O. Lehvaslaiho, Stefan Eilemann, Renaud B. Jolivet, Markus Hadwiger, Henry Markram, Felix Schürmann, Pierre J. Magistretti*

June 2018

6. NEUROMORPHOVIS: A COLLABORATIVE FRAMEWORK FOR VISUALIZATION AND ANALYSIS OF NEURONAL MORPHOLOGY SKELETONS RECONSTRUCTED FROM MICROSCOPY STACKS
Oxford Bioinformatics
AUTHORS — ***Marwan Abdellah**, Juan Hernando, Stefan Eilemann, Samuel Lapere, Nicolas Antille, Henry Markram, and Felix Schürmann*

September 2017

7. RECONSTRUCTION AND VISUALIZATION OF LARGE-SCALE VOLUMETRIC MODELS OF NEOCORTICAL CIRCUITS FOR PHYSICALLY-PLAUSIBLE IN SILICO OPTICAL STUDIES
BMC Bioinformatics 2017
AUTHORS — ***Marwan Abdellah**, Juan Hernando, Nicolas Antille, Stefan Eilemann, Henry Markram, and Felix Schürmann*

February 2017

8. BIO-PHYSICALLY PLAUSIBLE VISUALIZATION OF HIGHLY SCATTERING FLUORESCENT NEOCORTICAL MODELS FOR IN SILICO EXPERIMENTATION
BMC Bioinformatics 2017 · Volume 18 · Supplement 2:62
AUTHORS — ***Marwan Abdellah**, Ahmet Bilgili, Stefan Eilemann, Julian Shillcock, Henry Markram, and Felix Schürmann*

October 2015

9. RECONSTRUCTION AND SIMULATION OF NEOCORTICAL MICROCIRCUITRY
Cell
AUTHORS — *Henry Markram, Eilif Muller, Srikanth Ramaswamy, Michael W. Reimann, **Marwan Abdellah**, Carlos Aguado Sanchez, Anastasia Ailamaki, Lidia Alonso Nanclares, Nicolas Antille, Selim Arsever, Guy Antoine Atenekeng Kahou, Thomas K. Berger, Ahmet Bilgili, Nenad Buncic, Athanassia Chalimourda, Giuseppe Chindemi,*

Jean-Denis Courcol, Fabien Delalondre, Vincent Delattre, Shaul Druckmann, Raphael Dumusc, James Dynes, Stefan Eilemann, Eyal Gal, Michael Emiel Gevaert, Jean-Pierre Ghobril, Albert Gidon, Joe W. Graham, Valentin Haenel, Etay Hay, Thomas Heinis, Juan B. Hernando, Michael Hines, Lida Kanari, Daniel Keller, John Kenyon, Georges Khazen, Yihwa Kim, James G. King, Zoltan Kisvarday, Pramod Kumbhar, Sebastien Lasserre, Bruno R.C. Magalhaes, Angel Merchán-Pérez, Julie Meystre, Benjamin Roy Morrice, Jeffrey Muller, Alberto Munoz-Cespedes, Shruti Muralidhar, Keerthan Muthurasa, Daniel Nachbaur, Taylor H. Newton, Max Nolte, Aleksandr Ovcharenkov, Juan Palacios, Luis Pastor, Rodrigo Perin, Rajnish Ranjan, Imad Riachi, José-Rodrigo Rodríguez, Roman Juan Luis Riquelme, Christian Andreas Rössert, Ying Shi, Julian C. Shillcock, Ricardo Silva, Farhan Tauheed, Martin Telefont, Maria Toledo-Rodriguez, Thomas Tränkler, Werner Van Geit, Jafet Villafranca Diaz, Richard Walker, Yun Wang, Stefano M. Zaninetta, Javier DeFelipe, Sean L. Hill, Idan Segev and Felix Schürmann

August 2015

10. The Neocortical Microcircuit Collaboration Portal: A Resource for Rat Somatosensory Cortex
Frontiers in Neural Circuits
Authors — *Srikanth Ramaswamy, Jean-Denis Courcol, **Marwan Abdellah**, Stanislaw Adaszewski, Nicolas Antille, Selim Arsever, Atenekeng Kahou Guy Antoine, Ahmet Bilgili, Yury Brukau, Giuseppe Chindemi, Raphael Dumusc, Stefan Eilemann, Lida Kanari, Daniel Keller, James G. King, Rajnish Ranjan, Michael Wolfgang Reimann, Christian Roessert, Martin Telefont, Werner Van Geit, Jafet Villafranca Diaz, Richard Walker, Yun Wang, Stefano Zaninetta, Javier DeFelipe, Sean L Hill, Jeffrey Muller, Idan Segev, Felix Schürmann, Eilif Benjamin Muller and Henry Markram*

August 2015

11. Physically-based In Silico Light Sheet Microscopy for Visualizing Fluorescent Brain Models
BMC Bioinformatics 2015 · Volume 16 · Supplement 11:S8
Authors — ***Marwan Abdellah**, Ahmet Bilgili, Stefan Eilemann, Henry Markram, and Felix Schürmann*

January 2015

12. High Performance GPU-based Fourier Volume Rendering
International Journal of Biomedical Imaging · Article ID 590727
Authors — ***Marwan Abdellah**, Ayman Eldeib and Amr Sharawi*

Conference Proceedings

October 2019

13. High fidelity visualization of large scale digitally reconstructed brain circuitry with signed distance functions
IEEE Visualization Conference (IEEE Vis 2019) · Vancouver, Canada
Authors — *Jonas Karlsson, **Marwan Abdellah**, Sebastien Speierer, Alessandro Foni, Samuel Lapere, and Felix Schürmann*

September 2019

14. Generating High Fidelity Surface Meshes of Neocortical Neurons using Skin Modifiers
EG Computer Graphics & Visual Computing (CGVC) 2019 · Bangor, Wales, UK
Authors — ***Marwan Abdellah**, Cyrille Favreau, Juan Hernando, Samuel Lapere, and Felix Schürmann*

July 2018

15. NeuroMorphoVis: a collaborative framework for visualization and analysis of neuronal morphology skeletons reconstructed from microscopy stacks
Workshop on Biological Data Visualization (BioVis 2018), ISMB 2018 · Chicago, USA
Authors — ***Marwan Abdellah**, Juan Hernando, Stefan Eilemann, Samuel Lapere, Nicolas Antille, Henry Markram, and Felix Schürmann*

October 2017

16. From Big Data to Big Displays High-Performance Visualization at Blue Brain
International Conference on High Performance Computing, ISC High Performance 2017 · Frankfurt, Germany
Authors — *Stefan Eilemann, **Marwan Abdellah**, Nicolas Antille, Ahmet Bilgili, Grigory Chevtchenko, Raphael Dumusc, Cyrille Favreau, Juan Hernando, Daniel Nachbaur, Pawel Podhajski, Jafet Villafranca and Felix Schürmann*

July 2017

17. Reconstruction and Visualization of Large-scale Volumetric Models of Neocortical Circuits for Physically-plausible In Silico Optical Studies
7th Workshop on Biological Data Visualization (BioVis 2017), ISMB 2017 · Prague, Czechia
Authors — ***Marwan Abdellah**, Juan Hernando, Nicolas Antille, Stefan Eilemann, Henry Markram, and Felix Schürmann*

October 2016

18. Bio-physically Plausible Visualization of Highly Scattering Fluorescent Neocortical

Models for In Silico Experimentation
6th *Workshop on Biological Data Visualization (BioVis 2016), IEEE VIS 2016 · Baltimore, MD, USA*
Authors — ***Marwan Abdellah***, *Ahmet Bilgili, Stefan Eilemann, Julian Shillcock, Henry Markram, and Felix Schürmann*

August 2016 19. Efficient Rendering of Digitally Reconstructed Radiographs on Heterogeneous Computing Architectures using Central Slice Theorem
38th *Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBS) (EMBC 2016) · Orlando, FL, USA*
Authors — ***Marwan Abdellah***, *Mohamed Abdallah, Mohamed Alzanati, and Ayman M. Eldeib*

August 2016 20. Parallel Generation of Digitally Reconstructed Radiographs on Heterogeneous Multi-GPU Workstations
38th *Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBS) (EMBC 2016) · Orlando, FL, USA*
Authors — ***Marwan Abdellah***, *Asem Abdelaziz, Eslam Ali, Sherief Abdelaziz, Abdelrahman Sayed, Mohamed I. Owis, and Ayman M. Eldeib*

May 2016 21. Physically-based Rendering of Highly Scattering Fluorescent Solutions using Path Tracing
Eurographics 2016 · Lisbon, Portugal
Authors — ***Marwan Abdellah***, *Ahmet Bilgili, Stefan Eilemann, Henry Markram, and Felix Schürmann*

April 2016 22. Interactive High Resolution Reconstruction of 3D Ultrasound Volumes on the GPU
2016 IEEE International Symposium on Biomedical Imaging: From Nano to Macro · Prague, Czech Republic
Authors — ***Marwan Abdellah***, *Asem Abdelaziz, and Ayman M. Eldeib*

April 2016 23. Optimized GPU-accelerated Framework for X-ray Rendering using *k*-space Volume Reconstruction
XIV Mediterranean Conference on Medical & Biological Engineering & Computing (MEDICON 2016) · Paphos, Cyprus
Authors — ***Marwan Abdellah***, *Yassin Amer, and Ayman Eldeib*

August 2015 24. Accelerating DRR Generation Using Fourier Slice Theorem on the GPU
37th *Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBS) (EMBC 2015) · Milan, Italy*
Authors — ***Marwan Abdellah***, *Ayman M. Eldeib, and Mohamed Owis*

August 2015 25. GPU Acceleration for Digitally Reconstructed Radiographs using Bindless Texture Objects and CUDA/OpenGL Interoperability
37th *Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBS) (EMBC 2015) · Milan, Italy*
Authors — ***Marwan Abdellah***, *Ayman M. Eldeib, and Mohamed Owis*

July 2015 26. Physically-based In Silico Light Sheet Microscopy for Visualizing Fluorescent Brain Models
5th *Symposium on Biological Data Visualization (BioVis 2015) · Dublin, Ireland*
Authors — ***Marwan Abdellah***, *Ahmet Bilgili, Stefan Eilemann, Henry Markram, and Felix Schürmann*

May 2015 27. A Computational Model of Light-Sheet Fluorescence Microscopy using Physically-based Rendering
Eurographics 2015 · Zürich, Switzerland
Authors — ***Marwan Abdellah***, *Ahmet Bilgili, Stefan Eilemann, Henry Markram, and Felix Schürmann*

December 2014 28. MATLAB-based Fourier Volume Rendering Framework
IEEE, Proceedings of the 7th Cairo International Biomedical Engineering Conference (CIBEC 2014) · Cairo, Egypt
Authors — ***Marwan Abdellah***, *Ayman Eldeib and Amr Sharawi*

December 2014 29. Offline Large Scale Fourier Volume Rendering on Low-end Hardware

IEEE, Proceedings of the 7th Cairo International Biomedical Engineering Conference (CIBEC 2014) · Cairo, Egypt
Authors — ***Marwan Abdellah***, *Ayman Eldeib and Amr Sharawi*

April 2014

30. cufftShift: High Performance CUDA-accelerated FFT-shift Library
Proceedings of the High Performance Computing Symposium (HPC '14), Article No. 5 · Tampa, FL, USA
Authors — ***Marwan Abdellah***

December 2012

31. Constructing a Functional Fourier Volume Rendering Pipeline on Heterogeneous Platforms
IEEE, Proceedings of the 6th Cairo International Biomedical Engineering Conference (CIBEC 2012) · Cairo, Egypt
Authors — ***Marwan Abdellah***, *Ayman Eldeib and Amr Shaarawi*

December 2012

32. High Performance Multi-dimensional (2D/3D) FFT-Shift Implementation on Graphics Processing Units (GPUs)
IEEE, Proceedings of the 6th Cairo International Biomedical Engineering Conference (CIBEC 2012) · Cairo, Egypt
Authors — ***Marwan Abdellah***, *Ayman Eldeib and Amr Shaarawi*

December 2012

33. High Performance CUDA-based Implementation for the 2D Version of the Maximum Subarray Problem (MSP)
IEEE, Proceedings of the 6th Cairo International Biomedical Engineering Conference (CIBEC 2012) · Cairo, Egypt
Authors — *Salah Saleh,* ***Marwan Abdellah***, *Ahmed A. Abdel Raouf and Yasser M. Kadah*

May 2012

34. Parallel Rendering on Hybrid Multi-GPU Clusters
Eurographics Symposium on Parallel Graphics and Visualization (EGPGV'12) · Cagliari, Italy
Authors — *Stefan Eilemann, Ahmet Bilgili,* ***Marwan Abdellah***, *Juan Hernando, Maxim Makhinya, Renato Pajarola, and Felix Schürmann*

September 2009

35. GPU-Based Reconstruction and Display for 4D Ultrasound Data
2009 IEEE International Ultrasonics Symposium · Rome, Italy
Authors — *Ahmed Elnokrashy, Ahmed Elmalky, Tamer Hosny,* ***Marwan Abdellah***, *Alaa Megawer, Abubakr Alsebai, Abou-Bakr Youssef and Yasser Kadah*

March 2009

36. Software Development for Low Cost, High quality, Real-time, 4D Ultrasound on Personal Computers
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