Marwan Abdellah

Curriculum Vitæ

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 — *Felix Schürmann* · LEAD — *Stefan Eilemann*

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 **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

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

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 · Java · 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*
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* · 4th *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

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

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 — *Lausanne · Switzerland (Permit B)*

Address — *Rue de Plan, 11 · Crissier · Vaud · 1023*

Mobile Phone *+41 (0) 79*
HomePage *www.marwan-abdellah.com*
Emails *abdellah.marwan@gmail.com* · *marwan.m.abdellah@ieee.org* · *marwan.abdellah@epfl.ch*
Languages English — *Fluent* · French — *Good* · Arabic — *Mothertongue*

PUBLICATIONS

PEER-REVIEWED JOURNAL ARTICLES

January 2019

1. 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

2. 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

3. 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

4. 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

5. 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

6. 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

7. 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 — 8. 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 — 9. 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 — 10. 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 — 11. 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 — 12. 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 — 13. 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 — 14. 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 — 15. 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 — 16. 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 — 17. 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

18. 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

19. 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

20. 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

21. 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

22. 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

23. 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

24. 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

25. 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

26. 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

27. 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

28. 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

29. 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

30. 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

31. 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

32. 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

33. Software Development for Low Cost, High quality, Real-time, 4D Ultrasound on Personal Computers
IEEE, 26th National Radio Science Conference (NRSC), Union Radio Scientifique Internationale (URSI) · Cairo, Egypt
Authors — ***Abdellah M.***, *Megawer A. and Kadah Y. Mh*

pre-prints

January 2018

34. Objective Classification of Neocortical Pyramidal Cells
bioRxiv
Authors — *Lida Kanari, Srikanth Ramaswamy, Ying Shi, Sebastien Morand, Julie Meystre, Rodrigo Perin,* ***Marwan Abdellah***, *Yun Wang, Kathryn Hess, Henry Markram*

January 2018

35. A physically plausible model for rendering highly scattering fluorescent participating media
arXiv.org
Authors — ***Marwan Abdellah***, *Ahmet Bilgili, Stefan Eilemann, Henry Markram, Felix Schürmann*

poster abstracts

July 2019

36. Advances in Neuronal Morphology Analysis, Meshing and Visualization with NeuroMorphoVis
Biological Data Visualization at International Society of Molecular Biology (ISMB) · Basel, Switzerland
Authors — ***M. Abdellah***, *Samuel Lapere, F. Schürmann, H. Markram*

November 2016

37. Characterization of Detection Iso-contours in a Single Fiber Photometry System
2017 Society for Neuroscience (SFN) Meeting · Washington DC, USA
Authors — *M. Mansy,* ***M. Abdellah***, *H. Kim, F. Schürmann and K. Oweiss*

July 2017

38. Reconstruction and Visualization of Large-scale Volumetric Models of Neocortical Circuits for Physically-plausible In Silico Optical Studies
5th Symposium of Biological Data Visualization · Prague, Czech Republic
Authors — ***M. Abdellah***, *Stefan Eilemann, Juan Hernando, F. Schürmann, H. Markram*

November 2016

39. In Silico Voltage Sensitive Dye Imaging in a Digital Reconstruction of Somatosensory Cortex

2016 Society for Neuroscience (SFN) Meeting · San Diego, USA
Authors — *T. H. Newton,* ***M. Abdellah****, E. Muller, F. Schürmann, H. Markram*

October 2012

40. A Unifying Model of the Neocortical Column 15: High Performance Computing and Software Development Challenges
2012 Society for Neuroscience (SFN) Meeting, 268.A Unifying Model of the Neocortical Column · New Orleans, USA
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