HENRIQUE TELES MAIA

henrique@cs.columbia.edu
http://henrique.is/here

EDUCATION

Columbia University – Graduate Studies
Ph.D. Candidate, Computer Science   *(expected)* Aug 2022
Advisors: Eitan Grinspun & Changxi Zheng
NSF Graduate Research Fellow & GEM Research Fellow
Thesis: *Harnessing Simulated Data with Graphs*

M. Phil, Computer Science (4.00)   Sept 2021
M.S, Computer Science (4.17)   May 2017

Columbia University– Dual Bachelor's Program
B.A., Computer Science (3.58)   May 2015
B.S., Mechanical Engineering (3.70)   May 2015

RESEARCH EXPERIENCES

Columbia Computer Graphics Group   Jan 2018 - Present
Graduate Researcher & Teaching Assistant   New York, NY
Mentors: Changxi Zheng & Eitan Grinspun
Topics: Simulation, Neural Networks, Information tagging, Security

University of Tokyo   Sept 2017 – Dec 2017
Visiting Scholar   Kashiwa, Japan
Mentor: Yonghao Yue
Topics: Hybrid discrete-fluid grain simulation, machine learning

University of Texas at Austin   Sept 2015 – Mar 2016
Visiting Scholar   Austin, TX
Mentor: Etienne Vouga
Topics: Tunneling free contact resolution, kinetic data structures

Columbia Makerspace   2014 - 2018
Superuser   New York, NY
Advisor: Mohammed Haroun, Bill Miller
Topics: 3D Printing, Laser cutting, CNC machining, G-code

Columbia University   2013-2014
Undergraduate Research Assistant   New York, NY
Mentors: Peter Allen, Eitan Grinspun
Topics: Assistive robotics, landslide simulation

PUBLICATIONS

Henrique Teles Maia, Changxi Zheng, Eitan Grinspun.
Data Driven Hair Simulation. in submission ACM TOG 2022

Peter Yichen Chen, Jinxu Xiang, Dong Heon Cho, G A Pershing, **Henrique Teles Maia**,
Maurizio Chiaramonte, Kevin Carlberg, Eitan Grinspun.
Modeling of PDEs Using Implicit Neural Representations. Submitted to NeurIPS 2022

Watkins-Valls, D., **Maia H.**, Varley J., Seshadri M., Sanabria J., Waytowich, N., & Allen, P.
Mobile Manipulation Leveraging Multiple Views. IROS 2022 – Best Paper Award Finalist

Henrique Teles Maia, Chang Xiao, Dingzeyu Li, Eitan Grinspun, Changxi Zheng.
<u>Can one hear the shape of a neural network?: Snooping the GPU via Magnetic Side Channel</u>.
USENIX Security 2022

Henrique Teles, Maia, Dingzeyu Li, Yuan Yang, Changxi Zheng (2019).
LayerCode: Optical Barcodes for 3D Printed Shapes. 2019 ACM SIGGRAPH
Yun (Raymond) Fei, **Henrique Teles Maia,** Christopher Batty, Changxi Zheng, Eitan Grinspun.
<u>A Multi-Scale Model for Simulating Liquid-Hair Interactions</u>. ACM SIGGRAPH 2017

C. Hung, C.P.Stark, H. Capart, B. Smith, **H. Teles Maia**, L Li and M. Reitz.
<u>Bedrock erosion by sliding wear in channelized granular flow.</u> American Geophysical Union Fall 2014

C. P. Stark, C. Hibert, G. Ekstrom, M. Reitz, B. Smith, E. Grinspun, **H. Teles Maia**, and D. Kaufman.
<u>Landslide dynamics from seismology and simulation.</u> Modeling Granular Media Across Scales 2014

INDUSTRY EXPERIENCE		
	Disney Animation Studios	May 2017 – Sept 2017
	Research Intern	Los Angeles, CA
	Manager: Rasmus Tamstorf	
	Topics: Efficient hair simulation, constraint optimization, code release	

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Adobe Systems inc.   June 2015- Sept 2015
Creative Technologies Lab intern   Seattle, WA
Manager: Danny Kaufman
Topics: Discrete elastic rod simulation, efficient large-scale n-body problems

1stDibs   May 2013 – Sept 2013
Backend Software Developer   New York, NY
Managers: Vadim Leyzerovich, Ross Paul
Topics: Automating Email services, tools

Meta   Jan 2013 – May 2013
Software Developer   New York, NY
Managers: Austin Reiter, Meron Gribetz
Topics: Augmented Reality, hand tracking

PROJECTS

Neural Dynamics, with Peter Chen and G Pershing
Model reduction for simulation via learned deformation maps

Fast Hair, with Peter Chen, Mengxuan Li, Logan Wang
GPU acceleration of discrete elastic rod simulation code

Automated Air Hockey
Designed, manufactured, and prototyped a robotic air-hockey opponent

BrickBreakAR
Lead Engineer on 3D Augmented Reality rendition of Brick Breaker

Ray-Tracers & Pipeline Renders
Featuring reflection, soft shadows, Bezier surfaces, Monte-Carlo methods

Linger
Award winning app allowing for continued access to basic services when your phone dies

Graph Domain Language

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Graph Domain Language

Language designed to robustly facilitate graphs, decision trees, and automata

HONORS & AWARDS

- NSF Research Fellow
- GEM Research Fellow
- Ford Foundation Fellow Honorable Mention
- Columbia Design Expo – 1st Place for Automated Air-Hockey Robot entry
- CS Dept. Ph.D. Service Award (2019 & 2020)
- Lapin d'Or – First place Columbia Computer Animation competition
- Twilio Award – DevFest 2014
- RoboRace 2013 Finalist
- St Lawrence Community Service Award

CONFERENCES ATTENDED

ACM Symposium Computational Fabrication: 2019
ACM Symposium Computer Animation: 2015, 2017, 2019
ACM SIGGRAPH: 2014 - 2021
TWIG (Tri-State Workshop on Imaging and Graphics): 2014-2015

DEMOS & TALKS

Thesis Proposal: *Harnessing Simulated Datasets with Graphs*	Columbia Uni. 2021
Symposium on Computational Fabrication Poster	Carnegie Mellon Uni. 2019
Candidacy Presentation: *Can We Learn to Sim?*	Columbia Uni. 2019
Research Internship Presentation – Disney Animation	Los Angeles 2017
University of Texas at Austin Talk	UT Austin 2016
Research Internship Presentation – Adobe Research	Seattle 2015
SIGGRAPH Intel Demo, Booth	Los Angeles 2015
SIGGRAPH Tangible Modular Input Devices, Booth	Vancouver, CA 2014

Industry Research Discussions: Nvidia • IKEA • Weta Digital
Pixar • Snap Research • Disney Animation
Adobe Systems • Blue Sky Studios

TEACHING EXPERIENCES

Computer Animation – *guest lecturer and head teaching assistant*
Computer Graphics – *teaching assistant*
edX Columbia (MOOC) Computer Animation Course – *head teaching assistant*

MENTORSHIP

Carlos Enrique López Garcés
Adrish Dey
Klint Qinami, next stop: Princeton University
Mingxuan Li, next stop: Treyarch (Activision Blizzard)
G Pershing
Logan Wang, next stop: Facebook Reality Labs
Drew Feldman, next stop: University College London
Raphael Charrondiere, next stop: ENS Lyon
Simon Anuszczyk, next stop: Caltech
Tyler St Dennis, next stop: Berkeley
Michael Falkenstein, next stop: Disney Animation Studios
Vaibhav Siva Vavilala, next stop: Pixar Animation

SKILLS

Research: Physics-based Simulation • Machine Learning • Graphics
Tagging • 3D Printing • Vision • Security • GPUs
Languages: C++, Python, MATLAB, C, Java, L^AT_EX

Operating Systems:	MacOS, Linux/Ubuntu, Windows	
Frameworks:	Tensorflow • PyTorch • Fusion 360 • Unity3D	
	Modo • PTC Creo • Git • OpenCV • Houdini	
Communication:	English (fluent) • Portuguese (fluent) • French (basic) • Spanish (basic)	

PROFESSIONAL SERVICE

ACM SIGGRAPH Research Career Development Committee (RCDC) Grad School Mentor

NSF Fellowship Mentor

ACM SIGGRAPH Reviewer

IEEE T-ASE reviewer

Campus Day Organizer: Columbia University, UT Austin

MS Application Review Committee: Columbia University

ACM SIGGRAPH Posters Committee: Volunteer

REFERENCES

Eitan Grinspun

Changxi Zheng

Shree Nayar

Dingzeyu Li