

Education

- 2019–present **Doctor of Philosophy**, *Texas A&M University*, College Station, TX
Computer Science
- 2012–2015 **Bachelor of Science**, *University of Virginia*, Charlottesville, VA
with Distinction, Computer Science

Research Experience

- 2019–present **Graduate Assistant**, *Texas A&M University*, College Station, TX
- 2022 **Software Engineer Intern, Graphics**, *Meta Reality Labs*
- 2021 **Research Engineer Intern, Computational Imaging & Graphics (PhD)**,
Facebook Reality Labs
- 2016–2019 **Software Engineer**, *Rensselaer Polytechnic Institute*, Troy, NY

Book Chapters

- [1] **Nicholas Milef**, Di Qi, and Suvranu De. “Rendering Surgery Simulation in Vulkan”. *GPU Zen 2*. Black Cat Publishing, 2019.

Conference/Journal Publications

- [2] **Nicholas Milef**, Shinjiro Sueda, and Nima Kalantari. “Variational Pose Prediction with Dynamic Sample Selection from Sparse Tracking Signals”. *Eurographics* (2023).
- [3] **Nicholas Milef**, Adam Ryason, Di Qi, Samuel O Alfred, Cullen D Jackson, and Suvranu De. “Disruptions to shared mental models from poor quality of service in collaborative virtual environments”. *Scientific reports* 11.1 (2021), pp. 1–12.
- [4] Di Qi, **Nicholas Milef**, and Suvranu De. “Divided Voxels: an efficient algorithm for interactive cutting of deformable objects”. *The Visual Computer* 37.5 (2021), pp. 1113–1127.
- [5] Di Qi, Adam Ryason, **Nicholas Milef**, Samuel Alfred, Mohamad Rassoul Abu-Nuwar, Mojdeh Kappus, Suvranu De, and Daniel B Jones. “Virtual reality operating room with AI guidance: design and validation of a fire scenario”. *Surgical Endoscopy* 35.2 (2021), pp. 779–786.
- [6] Di Qi, Emil Petrusa, Uwe Kruger, **Nicholas Milef**, Mohamad Rassoul Abu-Nuwar, Mohamad Haque, Robert Lim, Daniel B Jones, Melih Turkseven, Doga Demirel, et al. “Surgeons With Five or More Actual Cricothyrotomies Perform Significantly Better on a VR Simulator”. *Journal of Surgical Research* 252 (2020), pp. 247–254.

Posters

- [7] **Nicholas Milef** and Nima Kalantari. “Foveated Monte-Carlo Denoising”. ACM SIGGRAPH 2021 Posters. 2021.
- [8] Di Qi, Adam Ryason, **Nicholas Milef**, Samuel Alfred, Mohamad R. Abu-Nuwar, Mojdeh Kappus, Suvranu De, and Daniel B Jones. “Virtual Reality Operating Room with AI Guidance: Design and Validation of a Fire Scenario”. Society of American Gastrointestinal and Endoscopic Surgeons (SAGES) Virtual Meeting (2020). 2020.

- [9] Ganesh Sankaranarayanan, Coleman Odlozil, Rehma Shabbir, Di Qi, Melih Turkseven, **Nicholas Milef**, Suvranu De, Geoffrey Funk, and Rebecca J. Weddle. "TRAINING ON A VIRTUAL REALITY CRICOTHYROIDOTOMY SIMULATOR". Proceedings of the American Association for the Surgery of Trauma (AAST) 2020, Poster Presentation. 2020.
- [10] Di Qi, Uwe Kruger, **Nicholas Milef**, Mohamad Rassoul Abu-Nuwar, COL Mohamad Haque, COL Robert Lim, Daniel B. Jones, Turkseven Melih, Emil Petrusa, Doga Demirel, Tansel Halic, Suvranu De, and Noelle Saillant M.D. "P403 VALIDATION OF A VIRTUAL CRICOTHYROIDOTOMY SIMULATOR VAST-CCT". Society of American Gastrointestinal and Endoscopic Surgeons (SAGES) Annual Meeting (2019). 2019.
- [11] Zhaohui Xia, Hong Li, **Nicholas Milef**, Adam Ryason, Daniel Jones, Suvranu De, and Stephanie Jones. "P400 Development of a Physics-Based Virtual Interactive Endotracheal Intubation (ETI)". Society of American Gastrointestinal and Endoscopic Surgeons (SAGES) Annual Meeting (2019). 2019.
- [12] Zhaohui Xia, Sudeep Hedge, **Nicholas Milef**, Daniel Jones, Suvranu De, Mundeep Sawhney, and Cullen Jackson. "P376 Design and Development of Virtual Endocuminal Surgical Simulator (VESS) for Endoluminal Submucosal Extraction". Society of American Gastrointestinal and Endoscopic Surgeons (SAGES) Annual Meeting (2019). 2019.
- [13] Ganesh Sankaranarayanan, Carlos Lopez, **Nicholas Milef**, Rehma Shabbir, Coleman Odlozil, Darius Sherman, Jaisa Olasky, Katerina Wells, Sanket Chauhan, James Fleshman, Suvranu De, and Daniel B. Jones. "P303 Virtual electrosurgery skills trainer (VEST TM) bipolar energy module may be used with FUSE curriculum to improve safety in using bipolar devices". 16th World Congress of Endoscopic Surgery. 2018.
- [14] Carlos A. Lopez, Asish Misra, **Nicholas B. Milef**, Nicole Santos, Akole Lamien, Caroline G. L. Cao, Steven Schwaitzberg, Daniel B. Jones, Suvranu De, and Jaisa S. Olasky. "P330 Design of the electrosurgery skill trainer (VEST) direct and capacitive coupling effects module". 16th World Congress of Endoscopic Surgery. 2018.

Software

- iMSTK
 - Interactive medical surgery simulation framework (C++)
 - Open source collaboration with Kitware, Inc.
 - Designed and developed Vulkan physically-based renderer

Media Coverage

- 2020 **Rensselaer News**, *Rensselaer Polytechnic Institute*, Troy, NY
"\$2.3 Million Grant Will Support Development of Virtual Operating Room Team Training"
- 2018 **Times Union**, *Rensselaer Polytechnic Institute*, Troy, NY
"RPI scientists develop virtual reality surgery to feel real"

Teaching

- S2023 **Teaching Assistant - Capstone**, *Texas A&M University*, College Station, TX
Held office hours, managed/mentored teams, graded work
- F2020, S2021, F2022 **Teaching Assistant - Programming Studio**, *Texas A&M University*, College Station, TX
Held office hours, designed and taught lab sections, graded work

- F2015 **Teaching Assistant - Operating Systems**, *University of Virginia*, Charlottesville, VA
Held office hours, graded homework assignments
- F2015 **Teaching Assistant - Computer Architecture**, *University of Virginia*, Charlottesville, VA
Held office hours, led lab section
- F2015 **Teaching Assistant - Data Structures and Program Representation**, *University of Virginia*, Charlottesville, VA
Held office hours, led lab section, graded exams

Professional Service

- 2023 **Reviewer for Journal of Robotic Surgery**

Skills

- Prog.** C/C++, GLSL, Java, C#, Python, **APIs** Vulkan, OpenGL
Lang. \LaTeX
- Tools** Visual Studio, Android Studio, Unity Engine, Unreal Engine, Blender, CMake, Git **Frameworks** iMSTK, VTK, PyTorch