

# Nishchal Sapkota

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## EDUCATION

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**The University of Notre Dame (UND)**  
Ph.D. in Computer Science and Engineering

Notre Dame, IN  
08/2020 - Present

- Research Area: Computer Vision, Deep Learning, Bio-medical Image Analysis
- Advisor: **Dr. Danny Chen**

**The University of Southern Mississippi (USM)**  
Bachelor of Science with Honors, Cumulative GPA: **3.91**, *Summa Cum Laude*

Hattiesburg, MS  
08/2016 - 05/2020

- Computer Science (major GPA 3.95)
- Mathematics (major GPA 3.85)
- Thesis: *Probabilistic Analysis of Revenues in Online Games*
- Advisor: **Dr. Bernd Schroeder** and **Dr. Zhifu Xie**

## PUBLICATIONS

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### Conference Papers

- [Nishchal Sapkota](#), Yejia Zhang, Susan M Motch Perrine, Yuhua Hsi, Sirui Li, Meng Wu, Greg Holmes, Abdul R. Abdulai, Ethylin W. Jabs, Joan T. Richtsmeier, and Danny Z Chen. ConUNETR: A conditional transformer network for 3D Micro-CT embryonic cartilage segmentation. *IEEE International Symposium on Biomedical Imaging (ISBI)*, 2024
- [Nishchal Sapkota](#), Yejia Zhang, Sirui Li, Peixian Liang, Zhuo Zhao, and Danny Z Chen. SHMC-Net: A mask-guided feature fusion network for sperm head morphology classification. *IEEE International Symposium on Biomedical Imaging (ISBI)*, 2024
- Yejia Zhang, Pengfei Gu, [Nishchal Sapkota](#), Yaopeng Peng, Hao Zheng, and Danny Z Chen. Swipe: Efficient and robust medical image segmentation with implicit patch embeddings. *Medical Image Computing and Computer-Assisted Intervention (MICCAI)*, 2023
- Yejia Zhang, Pengfei Gu, [Nishchal Sapkota](#), Hao Zheng, Peixian Liang, and Danny Z Chen. A point in the right direction: Vector prediction for spatially-aware self-supervised volumetric representation learning. *The IEEE International Symposium on Biomedical Imaging (ISBI)*, 2022
- Yejia Zhang, [Nishchal Sapkota](#), Pengfei Gu, Yaopeng Peng, Hao Zheng, and Danny Z Chen. Keep your friends close & enemies farther: Debiasing contrastive learning with spatial priors in 3d radiology images. In *2022 IEEE International Conference on Bioinformatics and Biomedicine (BIBM)*, pages 1824–1829. IEEE, 2022
- Yejia Zhang, Xinrong Hu, [Nishchal Sapkota](#), Yiyu Shi, and Danny Z Chen. Unsupervised feature clustering improves contrastive representation learning for medical image segmentation. In *2022 IEEE International Conference on Bioinformatics and Biomedicine (BIBM)*, pages 1820–1823. IEEE, 2022
- [Nishchal Sapkota](#), Rimsha Bhatta, Phillip Dabney, and Zhifu Xie. Hunting co-operation in the middle predator in three species food chain model. *Proceedings of the Louisiana-Mississippi Section of the Mathematical Association of America*, 2020

### Journal Papers

- Susan M Motch Perrine, [Nishchal Sapkota](#), Kazuhiko Kawasaki, Yejia Zhang, Danny Z Chen, Mizuho Kawasaki, Emily Durham, Yann Heuze, Laurence Legeai-Mallet, and Joan T Richtsmeier. Embryonic cranial cartilage defects in the fgfr3y367c/+ mouse model of achondroplasia. *Anatomical Record*, 2023

## Conference Abstracts

- Jordan Wilson, Frederick Foster, [Nishchal Sapkota](#), Yejia Zhang, Michael Hsi, Mizuho Kawasaki, Abigail Coupe, Danny Z Chen, Joan T Richtsmeier, Kazuhiko Kawasaki, and Susan M Motch Perrine. Embryonic origins of lower jaw pathologies in fgfr-related craniosynostosis: Morphometric insights from mouse models of apert and crouzon syndromes. *American Association for Anatomy*, 2024
- Frederick Foster, Abigail Coupe, Michael Hsi, Mizuho Kawasaki, Cere Dickerson, [Nishchal Sapkota](#), Yejia Zhang, Meng Wu, Ethylin W Jabs, Danny Z Chen, Susan M Motch Perrine, Joan T Richtsmeier, and Kazuhiko Kawasaki. Developmental dynamics of meckel's cartilage and the dentary in mice. *American Association for Anatomy*, 2024
- Susan M Motch Perrine, [Nishchal Sapkota](#), Yejia Zhang, Danny Z Chen, Mizuho Kawasaki, Emily Durham, Yann Heuze, Laurence Legeai-Mallet, and Joan T Richtsmeier. Cranial cartilage defects in the fgfr3 y367c/+ mouse model of achondroplasia. *American Association for Anatomy*, 2023
- Jordan A Wilson, Susan M Motch Perrine, Yejia Zhang, [Nishchal Sapkota](#), Danny Z Chen, Meng Wu, Mizuho Kawasaki, Megan Veltri, Abigail Coupe, Ethylin Wang Jabs, Kazuhiko Kawasaki, and Joan T Richtsmeier. Integrating microcomputed tomography and histology to construct a 3d model of the lower jaw in c57bl/6j mice. *American Association for Anatomy*, 2023
- Susan M Motch Perrine, [Nishchal Sapkota](#), Kazuhiko Stephens, Kawasaki, Meng Wu, Danny Z Chen, Ethylin Wang Jabs, and Joan T Richtsmeier. Localized defects of the chondrocranium and meckel's cartilage of apert fgfr2+/p253r and crouzon fgfr2cc342y/+ mouse models. *12th Structural Birth Defects Meeting*, 2022

## Undergraduate Thesis

- [Nishchal Sapkota](#) and Bernd SW Schröder. Probabilistic analysis of revenues in online games. *University of Southern Mississippi*, 2020

## TEACHING EXPERIENCE

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### Warrior-Scholar Project - The University of Notre Dame [STEM Project Leader](#)

Notre Dame, IN

- Data Science and Exploratory Data Analysis Summer 2023
  - ⇒ Designed a one-week boot camp course for Veterans to prepare them for STEM college classes.
  - ⇒ Held classes covering Exploratory Data Analysis topics in Python.

### The University of Notre Dame [Graduate Teaching Assistant](#)

Notre Dame, IN

- Complexity and Algorithms (CSE 60111) Spring 2023 & Spring 2024
  - ⇒ Class Size: ~ 40 Graduate Students || Instructor: **Dr. Danny Chen**
  - ⇒ Prepared assignment solutions, graded assignments & tests and held office hours.
- Mobile App Design (CSE 40333) Spring 2021
  - ⇒ Class Size: 30 Undergraduate Students || Instructor: **Dr. John Templeton**
  - ⇒ Helped in preparing lecture materials, graded assignments/projects, and held office hours.
- Discrete Mathematics (CSE 20110) Fall 2020
  - ⇒ Class Size: 190 Undergraduate Students || Instructor: **Dr. Corey Pennycuff**
  - ⇒ Graded assignments/projects, and held office hours.

## SCHOLARSHIPS, GRANTS, HONORS AND ACHIEVEMENTS

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- CSE Select Fellowship Award (*1/40 incoming Ph.D students; \$40,000 every year for 5 years*) UND 2020
- Wright W. and Annie Rea Cross Endowed Chair in Mathematics (\$10,500) USM 2017-2019
- Danny R. Carter Endowed Scholarship (\$4,000) USM 2017, 2019
- [First Place](#), Mathematics Comprehensive Exam (MFT) USM 2019
- [Second Runner Up](#): Best Undergraduate Paper MAA LA/MS Section Meeting 2019
- Eagle SPUR/Wings grant, Drapeau Center for Undergraduate Research (\$2000) USM 2019
- Honors Keystone Scholarship (\$2000) USM 2019
- [Finalist](#), Integration Bee MAA LA/MS Section Meeting 2018
- Nominated for College of Science and Technology's [Outstanding Sophomore Award](#) USM 2017
- Burner Science and Technology Annual Scholarship (\$800) USM 2017
- Wallace C. and Lynn L. Pye Endowed Scholarship (\$800) USM 2017

## LEADERSHIP ROLES

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### The University of Southern Mississippi

Hattiesburg, MS

#### [Event Co-ordinator](#)

08/2018 - 05/2020

#### Nepalese Student Association (NSA, USM)

- Planned and organized events to promote socio-cultural aspects of Nepalese and other Southeast Asian International Students.
- Conducted the stage programs and arranged catering for the Annual Event (Nepali Night) for 300 attendees.

#### [International Ambassador](#)

Fall 2019

#### International Student and Scholar Services (ISSS, USM)

- Responsible for organizing Incoming International Student Orientation.
- Organized Campus Resources Fair.

#### [Director of Diversity](#)

04/2018 - 05/2019

#### Student Government Association (SGA, USM)

- Served as a student body representative in diversity affairs regarding faculty, staff, and students on campus.
- Worked with multicultural organizations, the university diversity committee, the office of multicultural services and all branches of SGA to promote diversity and inclusivity on campus and within SGA.

## CONFERENCES ATTENDED

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#### [Oral Presenter](#)

28<sup>th</sup> Annual USA/USM/SELU Math and Physics Mini-Conference

**The University of Southern Mississippi**

04/04, 2019

Gulfport, MS

[Second Runner-Up](#), Undergraduate Oral Presentation and Paper Competition

LA/MS Section Annual Meeting of Mathematics Association of America (MAA)

**Mississippi College**

02/21-02/23, 2019

Clinton, MS

#### [Poster Presenter](#)

SIAM Annual Meeting of Texas-Louisiana Section 2018

**Louisiana State University**

10/05-10/07, 2018

Baton Rouge, LA