[‍‍SWAPNIL BHATTA](https://www.linkedin.com/in/swapnil-bhatta/)

**📍 103 Saratoga Circle, Hattiesburg, MS|☎ (601)466-3221|📧** [**swpnl007@gmail.com**](mailto:swpnl007@gmail.com)

Physics and astronomy enthusiast, interested in general cosmology and astrodynamics. Experienced in data segmentation, predictive analytics and machine learning methods. Competent learner with positive work ethic and great communication skills.

Some of the sections below have hyperlinks linking to relevant documentation or more details. Also, and up-to-date curriculum vitae can be found [here](https://github.com/paws07/personal/raw/master/otherdocs/Resume%20Bhatta%20-%20Data%20July%2028.docx).

## EDUCATION

### UNIVERSITY OF SOUTHERN MISSISSIPPI Hattiesburg MS 2020

Bachelors of Science (Honors)

Physics and Astronomy | Mathematics

## CAREER SUMMARY

### TEACHING ASSISTANT | University of Southern Mississippi | 2018 AUG- PRESENT

*Description and Duties:*

* Worked as a teaching assistant for the university’s school of mathematics and natural sciences, the only undergraduate teaching assistant for physics.
* Responsible for conducting lectures on core principles implemented in the lab experiments, supervising and grading lab activities which included lab reports, quizzes and tests. Taught the following courses;
  + [General Physics Lab](http://catalog.usm.edu/preview_course_nopop.php?catoid=21&coid=109182&) (PHY 111L, 2018 & 2019 fall): Experiments demonstrating Kinematics, Newton's laws, energy, and momentum.
  + [Advanced Electronics Lab](http://catalog.usm.edu/preview_course_nopop.php?catoid=21&coid=109191&) (PHY 327L, 2019 spring): Fundamentals of vacuum and semiconductor devices with applications to scientific instrumentation.

### MATH TUTOR | University of Southern Mississippi | 2016 MAR- 2018 MAY

*Description and Duties:*

* Worked as a mathematics tutor for the university’s Math Zone, tutored students in college level algebra, statistics, trigonometry and calculus.
* Responsible for articulating mathematical concepts to students that visit the Math Zone and helping them based on their individual needs.

### ADMINISTRATIVE ASSISTANT | University of Southern Mississippi | 2016 JAN- 2018 MAY

*Description and Duties:*

* Worked as the senior administrative assistant for the university’s Writing Center.
* Responsible for interacting with clientele, helping manage day to day functions of the center and diligent record keeping. Further tasked with training and supervising new administrative assistants.

### SOCIAL MEDIA MANAGER | General Institute Nepal | 2015 Jun-Jul

*Description and Duties:*

* Worked as a social media manager for a language consultancy firm, trained in SEO.
* Responsible for e-marketing, creating, supervising social media content, and interacting with customers online.

### CONTENT MODERATOR | NEPTECH Solutions | 2014 NOV- 2015 APRIL

*Description and Duties:*

* Worked as a content moderator and supervisor for a language transcription company.
* Responsible for moderating the transcribed content for error, formulating new techniques and schemes for consumer interaction, quality control and evaluation of existing staff. Worked in a fast paced environment requiring utmost efficiency and communication.

## SKILLS AND QUALIFICATIONS

* Data quality assessment, analytics, segmentation and visualization. Time series analysis, forecasting and modeling of physical systems, machine learning.
* Experienced in managing and executing large-scale objectives through competent planning and execution.
* Excellent written and oral communication acquired through experiences in leadership, public relations, branding and marketing.
* Languages: English (bilingual fluency), Nepali (bilingual fluency), Hindi (working fluency).

## COMPUTATIONAL SKILLSET

|  |  |  |  |
| --- | --- | --- | --- |
|  | Experienced | Proficient | Advanced Beginner |
| Languages | Python\*, FORTRAN\*, MATLAB\*, | R\* | C++, Wolfram Cloud, Maple\*, SQL |
| Environment | Windows\* | Linux\*, macOS |  |
| Hardware | PC\* | Mac |  |
| Software | Microsoft Office Suite\*, LaTeX\* |  | Adobe Photoshop, AutoCAD, Tableau |

\*indicates certification or demonstrated usage in projects.

## RESEARCH PROJECTS

### PERTURBATION OF LAGRANGE POINTS IN EFFECTIVE POTENTIAL SIMULATIONS | Honors Thesis Project for Physics | Spring 2020

*Research Advisor: Dr. Michael Vera*

Analysis of the orbital positions of the Lagrange points firstly in a classical two-body configuration, followed by a computational analysis of their positions in a dynamic system after introducing the gravitational influences of other bodies. Used FORTRAN for computation, complied in a Linux environment, plots through MATLABand the paper itself in LaTeX.

### ASTROMETRIC ANALYSIS OF THE AGB STAR R SCULPTORIS | Our Solar Siblings Research Project | Fall 2019 - Ongoing

*Research Advisor: Dr. Christopher Sirola*

Analysis of the photometric parameters of the AGB star R Sculptoris using astrometry and data analysis, searching for the existence of a companion star. Data obtained through remote access of the Las Cumbres Observatory. Used Python for computation, complied in Windows and the paper itself in LaTeX.

### ANALOGS OF THE SCHWARZSCHILD METRIC IN FLAT SPACE-TIME. | Cross Scholar Research Project | Spring 2020 - Ongoing

*Research Advisor: Dr. Sungwook Lee*

An exploration of flat space-time, seeking mathematical solutions for an analog of the Schwarzschild metric. Used Maple for computation, complied in Linux and the paper itself in LaTeX.

## CAPSTONE PROJECTS

### ATTENUATION OF RADIATION THROUGH THE ABSORPTION OF GAMMA RAYS | Capstone Project in Radiation | Spring 2020

*Advisor: Dr. Jeremy Scott*

Analysis of the linear and mass attenuation coefficient of various lead samples based on their absorption of gamma rays emitted by various radionuclides. In fulfillment of the capstone project requirement for a degree in physics.

### TIME SERIES ANALYSIS OF THE ORBITAL DISTANCE BETWEEN THE MOON AND THE EARTH | Capstone Project in Data Analysis | Spring 2019

*Advisor: Dr. Bernd Schroeder*

Time series analysis of the orbital distance between the Moon and the Earth, through data obtained from NASA’s New Horizons program. In fulfillment of the capstone project requirement for a degree in mathematics. Used *R* for data analysis.

## PROFESSIONAL APPOINTMENTS

### PRESIDENT | Society of Physics Students – Southern Miss Chapter | 2018 MAY – 2020 MAY

Serving as the President for the Society of Physics Students chapter at Southern Miss.

### STUDENT AMBASSADOR | American Physical Society | 2018 AUG – 2020 MAY

Serving as a student ambassador for the American Physical Society.

### ASSOCIATE ZONE COUNCILOR | Society of Physics Students | 2018 JUN – 2019 MAY

Served on the Society of Physics Students National Council as the associate zone councilor for Zone 10, representing all SPS chapters from Louisiana, Arkansas, Mississippi and lower Tennessee.

## PROFESSIONAL MEMBERSHIPS

Society of Physics Students (SPS)

American Physics Society (APS)

Society for Industrial and Applied Mathematics (SIAM)

American Astronomical Society (AAS)

Sigma Pi Sigma Honors Society

## HONORS AND AWARDS

Presidents and Deans list for various semesters at the University of Southern Mississippi.

Outstanding Freshman Nominee (USM 2016).

Out-of-State Scholarship Award (2015-2019).

William F. St. Clair Endowed Scholarship Program in Physics (2015-2020).

Wright W. and Annie Rea Cross Mathematics Undergraduate Research Scholarship (2019)

Society of Physics Students Leadership Scholarship (2019)

SPS at USM Physics Student of the Year (2019)

## WORKSHOPS AND ACADEMIC CONFERENCES

IBM Data Analysis with Python | Coursea | Summer 2020

Data Driven Astronomy – University of Sydney | Summer 2020

American Physical Society – Leadership Conference | Jan 2020

NS3 Nuclear Science Summer School – Michigan State University | Summer 2019

Leadership Summit – University of Southern Mississippi | 2016, 2017

Genesis Nepal : Shaping your Future – A two week course on positive life (2011)

Genesis Nepal : Reaching Self-Actualization in life (2013)

## COMMUNITY ENGAGEMENT

### EDUCATIONAL OUTREACH | 2017- 2020

Through the SPS chapter at Southern Miss, helped promote physics in the community through various educational outreach activities and SPS grants. Actively involved with the clubs outreach to students from K-12.

### THE INTERNATIONAL CLUB AND BS UNION | University of Southern Mississippi | 2015- Present

Helped organize and facilitate activities and events for International Students at the university, primarily to help overcome a possible cultural shock and help promote interaction with a different community. Volunteered in various community clean-up events like the Big Event organized by the school and the city of Hattiesburg.

### EDUCATION FOR ALL | Shikshya Nepal | 2015

Helped collect books and reading material for donation campaigns by a NGO in Nepal. Further helped distribute these collected materials to under-privileged schools in rural Nepal.

### BLOOD DONATION CAMPAIGNS | Red Cross Nepal | 2014

Participated in blood donation campaigns organized by Red Cross Nepal, helped raise awareness my community about the importance of blood donation campaigns.

### VOLUNTEERING AND COMMUNITY SERVICE| Various NGOs | 2015.

Volunteered in rehabilitation programs such as building temporary shelters, distributing food and clothes in various regions of Nepal during the aftermath of the Nepal earthquake of 2015.

## HOBBIES AND INTERESTS

I enjoy science-fiction as movies and literature. I like video games, and love being around animals. I am also fond of travelling and plan to invest more time in it in the near future.

## REFERENCES

Dr. Michael Vera (Michael.Vera[@usm.edu](mailto:Melanie.barthelme@usm.edu)) Dr. Christopher Sirola ([Christopher.Sirola@usm.edu](mailto:Christopher.Sirola@usm.edu))

Faculty Head, Physics and Astronomy Associate Professor for Astronomy, USM