
Rajbir Singh

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EDUCATION

Wilson College of Textiles, North Carolina State University (NC State), Raleigh, NC, USA Masters in Textile engineering and Chemistry science. Coursework: Special studies in protection and comfort, Lean six sigma, Polymer Biomaterial, Ergonomics and comfort science, Weft and warp knitting, Physiology of clothing, Composite material processing, Apparel Technology management, independent research study with conductive materials.	Jan 2023 – Dec 2024
Bannari Amman Institute of Technology, Anna University, Coimbatore, TN, India Bachelor of Technology (B. Tech.) in Textile Technology	Aug 2018 – June 2022

PROFESSIONAL EXPERIENCE

Graduate Research Assistant Advisor: Dr. Eunkyong Shim <ul style="list-style-type: none">Creating a Non-woven hybrid geotextiles for urban stormwater nutrient management using Biochar and TiO2 and PP Non-woven	Aug 2024- Dec 2024
Research and Development Intern, Freudenberg Performance Material Durham, NC Mentor: Douglas Clark, Sean Steadley, Cory Smyer, Robinson Claytor <ul style="list-style-type: none">Determined relationship between fabric strength at various modulus levels to examine the relationship of bond points and fiber strength to reach a certain tensile and elongation point for enhancing physical properties on various non-woven fabrics and constructed a smaller mechanical instron (Project 1)Finding the solutions for limiting the use of Anti-static agents potentially saving up to \$200k annually (Project 2)Performed comprehensive physical testing on non-woven based unfinished and finished fabric samples, including tear, abrasion, puncture, electrostatic, tensile strength, and GSM, for R&D purposes and data collection to support necessary modifications.Gained hands-on experience in the extrusion and spunbond processes, contributing to high-quality product output and optimization of manufacturing techniques.	June 2024 – Dec 2024
Graduate Teaching Assistant, Wilson College of Textiles, NC State University, Raleigh, NC, USA Advisor: Dr. Jeff Joines	Jan 2024 - May 2024
Graduate Research Assistant, Wilson College of Textiles, NC State University, Raleigh, NC, USA Advisors: Dr. Andre West and Dr. Emiel DenHartog (Project 1) <ul style="list-style-type: none">Conducted conductive and resistive tests on a variety of 30 fabric samples and 5 custom-made yarns. Utilized equipment such as Moku Go, electrodes, Four point probes, data acquisition systems, conductivity testers, and environmental chambers to calculate various conductance points and address voltage leakage.Performed conductive and resistive tests using Moku Go, electrodes, Four-point probes, data acquisition systems, and conductivity testers. Additionally, crafted custom probes to address fixed voltage leakage for the end use, particularly in performance fabric applications.Conducted testing for performance and conductive based fabrics and yarns to test mechanical capabilities. Advisors: Dr. Ericka ford (Project 2) <ul style="list-style-type: none">Proficient in the development and testing of fibers derived from polymers and keratin through polymer solution spinning techniques to match the demanded description like fiber strength, tension, and texture.Tuning raw material proportions using various chemicals and testing with different proportions and temperatures to fabricate variants.Played a pivotal role in a confidential commercial initiative under NDA, showcasing expertise in pioneering research and development for data.	Jan 2023 – Dec 2023
Production Executive, Oster India PVT LTD, Punjab, India <ul style="list-style-type: none">Contributed to footwear product testing and integrating.Focusing on the implications for costing and quality in footwear design, utilizing CAD tools for model making and drafting.Directed warp knitting operations and oversaw testing lab for comprehensive fabric assessment to increase production quantity & quality.Collaborated on an IKEA soft toy initiative, fulfilling roles as both a quality and technical analyst to improve quality.Spearheaded regular sample approval meetings at IKEA India concerning soft toys to bag the orders.Formed a strategic partnership with Miarcus' R&D team to enhance comfort in BIBS and associated products, with a particular emphasis on optimizing nonwoven processing techniques to improve material quality and waste management both ways.	May 2022 – Dec 2022
Assistant Production Executive Intern, Udey Crafts Oster India PVT LTD, Punjab, India <ul style="list-style-type: none">Guided the exploration of innovative approaches to micro fabric production, showcasing creativity and material problem-solving abilities.Acquired comprehensive manufacturing expertise, particularly in circular and warp knitting methodologies to improve designing.Diligently administered production data and effectively supervised operations from manufacturing through to packing for a single consignment, underscoring practical hands-on proficiency.Experienced mechanical testing and machinery hands on footwear manufacturing machine to understand entire shoe uppers in a single piece.	April 2022 – May 2022
Lab Assistant, Jindba Processors, Punjab, India <ul style="list-style-type: none">Performed comprehensive physical and chemical analyses on fabric samples to align with industry benchmarks.	June 2020 – March 2021

- Cultivated expertise in **color testing**, showcasing meticulous attention to detail and adept **color analysis skills**.
- Formulated and fine-tuned dye color recipes for bulk fabric dyeing, highlighting precision and a deep understanding of processes.
- Led a collaborative initiative to improve chemical consumption efficiency in dyeing procedures, illustrating leadership and a dedication to resource optimization.

Assistant Production Executive Intern, Uday Udyog, Punjab, India

Jan 2020 – Jan 2020

- Acquired valuable proficiency in operating spinning **machinery** and supervising yarn **production** processes starting from filaments.
- Exhibited leadership capabilities by effectively guiding a team to fulfill a substantial consignment, showcasing strong project **management** and execution skills.

Quality Engineer Intern, Uday Udyog, Punjab, India

June 2019 – July 2019

- Underwent rigorous training supervised by the Production Head in **garment manufacturing**.
- Demonstrated proficiency by efficiently managing the complete production lifecycle of knitted sweaters, from the initial phases of gray fabric processing to the final stages of packing and dispatch.

ACADEMIC PROJECTS

Lean Six Sigma Training Course, Wilson College of textiles, NC State University, Raleigh, NC

Jan 2023 - May 2023

- Identified, quantified, examined and proposed solutions to reduce yearly (children) drowning fatalities.

Composites, Wilson College of Textiles, NC State University, Raleigh, NC

Jan 2024 – March 2024

- Conducted successful tests on to enhance **mechanical properties** and structural integrity of **polymer, natural fiber, and 3D-printed hybrid composites** through **autoclave (prepeg)** processing on footwear (Can use in any performance based textiles).

Anti-microbial and anti-bacterial mats, Bannari Amman Institute of Technology, Anna University, Sathyamangalam, Tamil Nadu, India.

Nov 2021 – April 2022

- Produced yoga mats and foot mats using Banana fibers and Lakadong turmeric for **anti-microbial and anti-bacterial properties and enhanced sustainability**.

LEADERSHIP

Secretary, Textile Association of Graduate Students (TAGS, Student Body)

Aug 2023 – May 2024

- Working closely with other members of the student government or student body executive team to plan and execute initiatives, events.
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SKILLS

- **CAD**, MS Office, JMP pro-17, **Apex** Shima Seiki, **Adobe** lightroom, illustrator and photoshop, **3D** printing, Data Analysis, Project management, VBA, A2mac1