

NIKITA BANSAL

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EDUCATION

Bachelor of Technology
2011-15
(Textile Technology)

National Institute of Technology (NIT),
Jalandhar

7.6/10
(Top 10%)

- Highest grades in Summer Internship Project (perfect 10) and Thesis Project (9.5)
- Only student in 7 years to have secured an international internship from the department
- Ranked among the top 2%, out of over 1 million students in All India Engineering Entrance Examination, 2011

CO-FOUNDER (Oct'16- Current)

- Developed and designed latest technological products, availed at affordable costs
- Product 1: **Musical Pillow**, made out of Fabric Speaker. This is for earphone-free music listening while sleeping.
- Product 2: **Protective Bracelet** (GPS, Loud Buzzer & app based)

PROFESSIONAL EXPERIENCE (24 months)

Design Engineer, Dhama Innovations, Hyderabad, India

(Jan'16- Current)

EVE: Menstrual Pain Relief Waistbelt

Role: Product Engineering

- Enhanced *user experience* by replacing button-controls on waist belt with wireless operation via Bluetooth & Android app.
- **Prototyped** wireless controls of heating therapy on Arduino with Bluetooth 4.0
- Created hardware specifications and features for eliminating mishaps
- Smoothened the transition between intensity levels of TENS therapy (Transcutaneous Electric Nerve Stimulation)
- Introduced a new Pulse mode, which is the softest, yet effective pulse rhythm for pain relief

EVE: Menstrual Pain Relief Waistbelt

Role: Product Design & Management

- Designed 2 product looks: for a discreet experience and for people who would like to flaunt EVE as a symbol of Period Pride.
- Designed logo for marketing strategy as Period Pride
- Strategically positioning the hardware components inside EVE for 100% body contact on lower abdomen and back
- Communicated & coordinated for the product vision between 4 teams- electronics, app developer, design and marketing team

EVE Android App

Role: UX/UI Design

- Designed flow of app for an intuitive experience
- Created unique features to minimize clicks required on app, such as Therapy Profile (explained on website)
- Combated product shortcomings (like mild shock on hand) by creating filters and extra controls on app
- Designed an Avtaar (Period Assistant) in a team of 3, for an interactive experience on app

dhamaSPORT: Cooling Wristband

Role: Product Engineering

- Enhanced ergonomics of the wristband by replacing the mouldable-only heat exchanger by a completely flexible one.
- Optimized the dimensions of metallic components for ultrasonic welding to create a thermally efficient and minimal assembly
- Designed & sourced bendable battery that fits all wrist sizes; this is to enhance ergonomics of the band
- Modified the form factor of dhamaSPORT by altering position of hardware elements inside product, shape and fabrication materials

Disneyland Project: Cooling Jackets on Rental

Role: Product Engineering & Management

- Designed UX of Rental process right from online ordering stage to re-usage of rented out jackets next time
- Strategically located cooling position on jacket's back to maximize the spreading of cooling
- Doubled the battery backup by altering the activation of half Peltier units at a time in a gap of 30 seconds

Cooling Shoe

Role: Product Design

- Strategically placed Peltier unit, fan and wireless charging coil in the shoe mold for maximum comfort
- Designed the outer sole for ensuing easy placement of components during manufacturing.

RESEARCH EXPERIENCE (7 months)

Research Fellow

Aug.'15- Dec.'15

Indian Institute of Technology Delhi (IIT-D), India

- Developed materials for **high impact resistance**, based on single polymer composites of **HDPE and PP** for use in helmet shells
- Experimented with 4 parameters- temperature, time, load & amount of polymer to achieve maximum impact resistance

International Research Intern

Jun.'14 – Jul.'14

Hochschule Niederrhein University of Applied Science, Germany, Europe

- Developed Textile Capacitors by sandwiching an insulation layer between 2 conductive fabrics. Insulation layer was composed of either flexible dielectric materials or a screen-coated insulation polymer or both
- Experimented with textile materials such as **Glass fabric, Carbon fabric, Cobalt & Nickel woven, Copper woven** and Aluminium pigmented fabric, and polymers based on **BaTiO₃ or TiO₂** due to their high dielectric values
- Execution with **Aluminium pigmented fabric** coated with BaTiO₃ based polymer, created an array of capacitors due to spacing between aluminium pigments, thereby providing **broader capacitance sensitivity** for use as a **potential sensor**

POSTER PRESENTATION

- N. Bansal, A. Ehrmann, M. Geilhaupt, **Textile Capacitors as Pressure Sensors**. Proceedings of **Aachen-Dresden International Textile Conference, Dresden, Germany**, November 27-28, 2014

ACADEMIC PROJECTS

Piezoelectric Sensor, NIT Jalandhar (Bachelor's Thesis)

Aug.'14- Apr.'15

- Developed sensors **based on capacitors**, i.e. using change of capacitance corresponding to the pressure applied and explored spacer fabrics and needle punched nonwovens for high pressure sensitivity.
- Conceptualized an **Anti-Molestation garment** that releases electric shock to the attacker as soon as the wearer receives a pressure more than the threshold pressure set.

Conductive Fabric, NIT Jalandhar

Jan.'13 – Apr.'13

- Developed conductive Polyester fabric by **in-situ chemical polymerization** of electrically **conductive polymer (Pyrrole)** onto polyester nonwoven fabric using Ferric Chloride as an oxidant and p-Toluene Sulphonic acid as a dopant

Wearable Tilt Sensor, NIT Jalandhar

Sep.'13 - Oct.'13

- Developed a wearable bracelet with 6-point tilt detection using **LilyPad Arduino** Kit, conductive fabrics and threads.

Line Following Robot, NIT Jalandhar

January 2012

- Attended workshop on Embedded Systems and worked with LED-LDR sensor, IR sensor, various actuators, gates and motor drivers, ultimately designing a Line Following Robot (LFR)

INDUSTRIAL TRAINING

Advanced Weaving Looms

July 2013

Screen Printing

June 2013

RELEVANT COURSES

Textiles & Fashion Designing	Physics	Mathematics-I, II	Material Science & Nano Science
Engineering Graphics	Chemistry	Probability & Statistics	Digital Electronics & Microprocessor Architecture
Textile (Weave) Design	Electrical Sciences	Financial & Cost Accounting	Operations Research
Garment Technology	Kinematics of Machines	Numerical Methods	Human Resource Management

SKILL SET

- **Smart/Electronic textiles:** Textile piezoelectrics, capacitors, conductive fabrics (Cu, Ni & Co wovens, Pyrrole coated fabrics, Glass fabric, Carbon fabric, Al pigmented fabric), LilyPad Arduino, resistive heating fabrics
- **Electronics:** BLE, Arduino, IAR embedded workbench, Transcutaneous Electric Nerve Stimulation
- **Polymers:** TiO₂, BaTiO₃, Polypyrrole, PP, HDPE, Epoxy
- **Thermal:** Thermoelectric Cooler Peltier module; aluminium sheet, copper braid and graphene based heat spreaders; resistive heating fabrics, carbon electrode pads
- **Mechanical:** Compression moulding, screen printing, drop tower system based impact strength testing, advanced weaving looms (Jacquard, Ravier, Projectile).

- **Designing tools:** CorelDRAW X5, TukaTech (Weave Designing), REACH Fashion Studio
- **Programming:** C, C++, HTML

POSITIONS OF RESPONSIBILITY

- Project Leader, Menstrual Pain Relief Waistbelt EVE v2, Dhama Innovations
- Project Leader, dhamaSPORT v4, Dhama Innovations
- Project Leader, Textile Capacitor, UG Major Project
- Co-Head, Textile Engineers Society, NIT Jalandhar
- Event Coordinator, International Textile Conference and National Seminar, NIT Jalandhar

ACHIEVEMENTS

- 1st position, *State Level Dance* competition, team of 10
- 2nd position, *Innovative Idea* Competition (College's Technical fest)
- 1st position, Fashion Show competition, *Theme-Recycle* (College's Cultural Fest)
- Best Presentation Award, Choreography Competition, *Theme-Women Empowerment* (College's Cultural Fest).

VOLUNTEER ACTIVITIES

- Conducted a workshop on *Awareness & Self Defence* in 4 schools with Indian Military's Jiu-Jitsu trainer, Mr. Arun Sharma
- Surveyed New Delhi's residents on enactment of the *Jan LokPal Bill* v/s the *Government Bill* in Parliament
- Organized *Meditation & Happiness* Programs in college campus, in association with the NGO 'The Art of Living'
- Competed in 30th National Yoga Championship