

Supporting Emotional Wellbeing

BY UTSAV MAHENDRA JOLAPARA | UNIVERSITY OF LEEDS GRADUATE

From childhood afternoons spent sketching cartoon characters and crafting cardboard ramps for Hot Wheels, Utsav Mahendra Jolapara's love for making quickly grew into a passion for purposeful design. That early curiosity eventually led him to the University of Leeds, where he pursued Product Design and discovered the power of blending creativity, empathy and technology to solve real human problems.



D&T ASSOCIATION DIRECTOR OF EDUCATION RYAN BALL PRESENTING THE DESIGN & TECHNOLOGY ASSOCIATION AWARD FOR POSITIVE IMPACT TO UTSAV MAHENDRA JOLAPARA AT NEW DESIGNERS

My journey into design started with a curiosity and love for making things, from drawing cartoon characters to building cardboard ramps for my Hot Wheels. This passion eventually evolved into furniture DIY projects and a desire to design real, purposeful products as I grew older. At the University of Leeds, I chose to pursue a BSc in Product Design, as it allowed me to continue being curious and create meaningful solutions to problems by combining creativity and empathy.

For my final year project, I explored a very human problem: anxiety and panic attacks. I wanted to bring people comfort and a sense of calm during moments of vulnerability. This led to Ripple, a project that brought emotional wellbeing through music, biology and technology.

Concept

My goal for the project was to create a product that leverages existing bio-mechanisms to help users feel calm, offering an alternative to pharmacological solutions. Sound has played a crucial role throughout human history, influencing mood, emotion and behaviour. Research also shows that music naturally elicits a physical reaction within us. Ripple builds on this connection through what I call the "Music-Response Chain", a system that lets users physically feel music.

Using a companion app, the device analyses a song's rhythm and translates it into electrical signals that drive the internal mechanism. This chain generates gentle tactile movements across its surface. These synchronised pulses engage the body's sensory pathways (nervous system), which in turn reduces the user's heart rate and creates a calming effect. By combining sound, touch and emotion, Ripple creates a multisensory grounding experience that helps users reconnect with themselves in moments of distress.

The Development Journey

The development of Ripple began with primary research interviews to understand users' lived experiences, followed by secondary research to define the problem further. With users' needs at the core, I began ideating multiple concepts and creating early prototypes using foam and 3D printing, which were evaluated in a focus group setting to gather valuable user feedback. These insights helped narrow down to my final concept.

Further development consisted of iterative prototyping and mechanism refinement, where I explored different methods of translating music into tactile motion. Early models used electromagnets and multiple motors, but these concepts were bulky, noisy and expensive. Exploring further, I then



FIRST PROTOTYPE

designed a single-motor cam mechanism capable of driving an array of pins beneath a flexible surface to create smooth, rhythmic motion. I used anthropometric data to ensure that the mechanism wouldn't stall under pressure from a user's hand. I then integrated a thrust bearing into the assembly to reduce friction and produce a quieter, more efficient mechanism.

I explored different materials and finishes, prototyping with a range of membrane thicknesses to achieve a balance between comfort, durability, cost and manufacturability. User feedback highlighted a preference for a softer, matte touch surface over harder finishes. TPU offered a soft, skin-friendly surface that would flex and transmit motion effectively, while ABS provided the structural strength the product needed while remaining cost-effective. In parallel, I learned and designed my first custom PCB, which integrated the motor driver, microcontroller, battery and wireless module. The board was designed for efficient power management and synchronisation with the companion app, which I coded using Python.

The Learning Experience

Working within manufacturing constraints deepened my appreciation of design for manufacturing, assembly and tolerancing, ensuring that the mechanism, materials and electronics worked harmoniously. From sketching, CAD modelling and PCB design to soldering and physical prototyping, each phase strengthened my understanding of product development because it was completely hands-on.

Developing Ripple taught me the value of iteration, empathy and the balance between creativity and engineering. Each prototype brought me closer to my goal and revealed new insights about the user experience. Even subtle design changes, such as adjusting the pin length by a few millimetres, could influence the user's emotional response. Through user testing, I learnt how people connect with sensory feedback and how important it is, in the end, to translate technical innovation into human comfort.

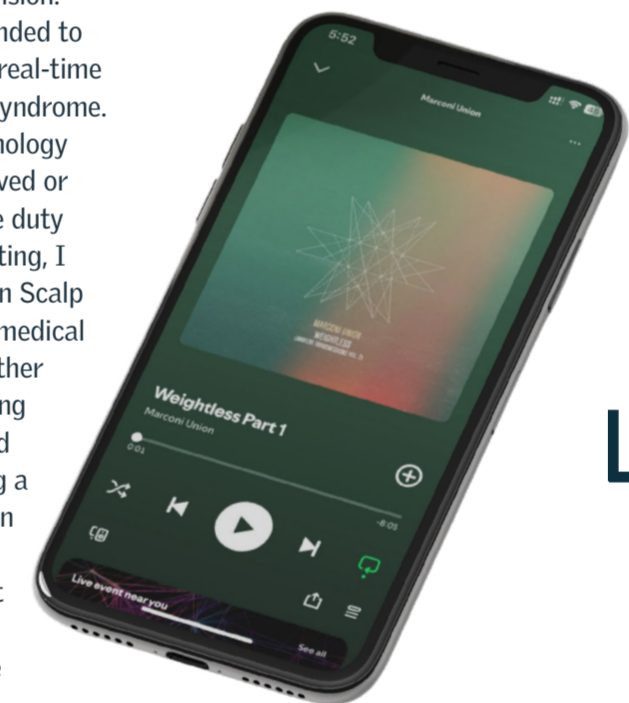


Looking Ahead

Looking ahead, I see Ripple's multisensory approach extending beyond anxiety relief into therapeutic, educational and assistive settings. For example, its ability to translate sound into tactile feedback could support hearing-impaired users in experiencing music through a different dimension. The core concept could be extended to translate audio and voices into real-time braille for people with Usher's syndrome. Exploring how design and technology can bring solutions to underserved or overlooked problem areas is the duty of every designer. After graduating, I have been working with Paxman Scalp Cooling on the development of medical devices for cancer patients, further deepening my interest in applying design to meaningful, real-world challenges. I see myself building a career in medical product design and development, where I continue creating solutions that combine empathy, functionality and innovation to bring positive outcomes for patients.

Award Recognition

I was extremely grateful for Ripple to be recognised with the Positive Impact Award at New Designers 2025, followed by the recognition I received at the Design & Technology Association Excellence Awards 2025. Both occasions were inspiring, motivating and reaffirmed the purpose behind why I design which is to bring meaningful and positive change to the lives of those around me.



WATCH: Utsav talking about his win at the D&T Association Excellence Awards
tinyurl.com/h5vhbr36

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