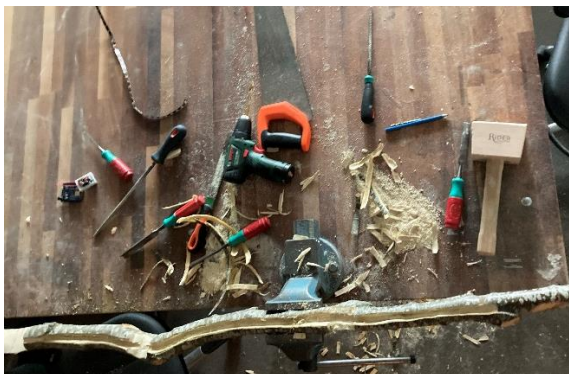


Birth of the Magic Tree

Why should playing an instrument need to be difficult? In this master thesis, an instrument made out of a tree branch and a mini computer allows everyone be a professional musician.

Most people are affected by music. It is a way to connect human to human, to communicate and express emotions. Music is an excellent way of interacting with others and can be an effective communication channel for persons with disabilities that may lack the ability to interact with speech. Traditional musical instruments often require fine motor skills and short response time. The MISK-project, a collaboration between Certec at LTH, Furuboda Folkhögskola and Eldorado Resurscenter in Gothenburg, wants to challenge this, by building new types of musical instruments that everyone can play on and enjoy. The focus of the MISK project is making instruments for children with multiple disabilities, and the outcome of the project is useful to everyone who enjoys playing music, maybe even to people who don't – yet.

In this master thesis, the instrument build takes the shape of a tree branch with hanging fibre optics, that senses touch through capacitance, a form of electrical potential. When touched, it lights up and plays music based on the user's playing.

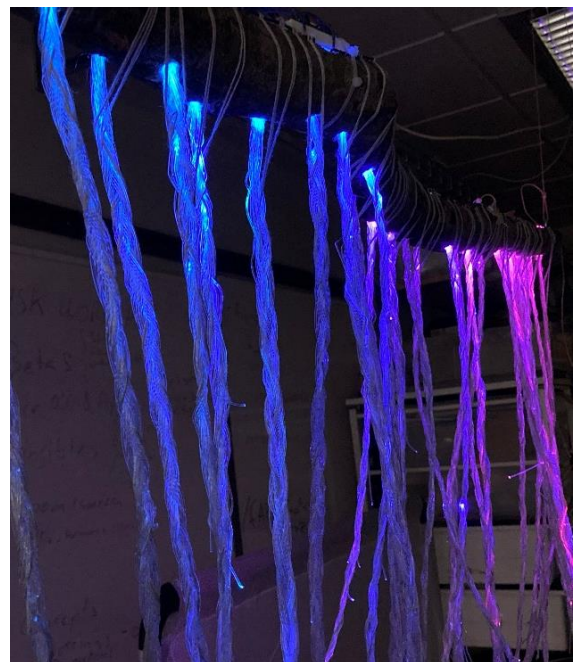


The Magic Tree is made out of a tree branch from my parents' garden

The branch is connected to the heart of the instrument, the MISK software, a synthesizer that processes the signals and converts in into sounds. Most instruments in the already existing

MISK-family light up when played. This master thesis explores the possibility to let the lights be the instrument, by connecting capacitive threads and fibre optics to an Arduino, a small and affordable programmable mini-computer. The result is a satisfying experience of hearing the voice of a tree branch when touching the mesmerising lights. The design is reviewed based on the Universal Design Principles, a set of principles that when followed, ensure a product that is available to everyone, regardless of their abilities. They have proven very useful in this design project, but can and should be used when designing all types of products to increase accessibility in the world.

The end product of this thesis, The Magic Tree, is played by touching the lights with some (conductive) part of the body. The hanging branches are easy to reach can be played with the face, hands or any part of the body. It doesn't need delicate movements or strong force, but will let anyone make music on it. The Magic Tree will hopefully bring variation into the MISK project and be continuously developed to reach persons eager to play music together in a new way, open to everyone.



Fibre optics create the mystical feeling of the tree "strings"

Herta Storlind, January 2024