HapticColour

CanHaptics Course Project

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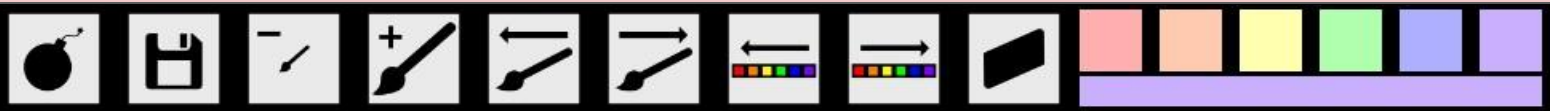
Motivation



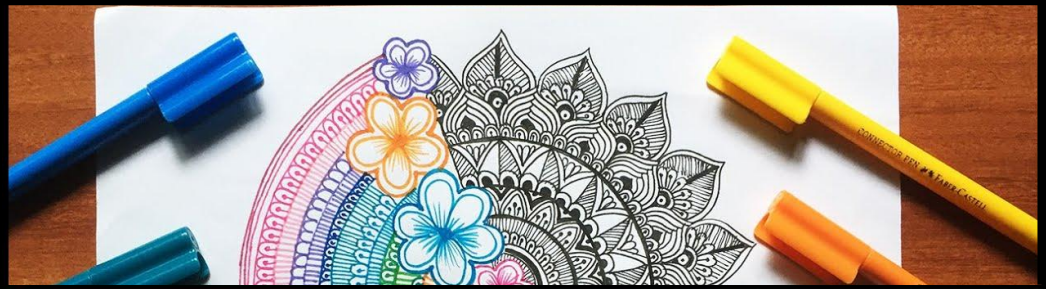
Anxiety Reduction

- Anxiety affects almost everyone at some point in their life
  - > 260 million people suffered from anxiety in 2017
  - Possibly more now due to current pandemic
  - Anxiety disorders = common

- How to reduce anxiety?
  - Mindfulness exercises (like colouring!)
  - Stimulate sense of touch

Mindfulness Through Colouring

- Colouring can decrease anxiety and increase mindfulness
- However:
  - Need materials for traditional colouring (colouring book + implements)
    - Drawing/doodling does not produce the same results!
  - Cannot receive haptic feedback with classic digital colouring programs



"Doing mindful colouring was identified as 'taking time' to practice self-reflection, self-awareness and self-care to promote physical, emotional and social wellbeing."

(Dresler and Perera 2019)

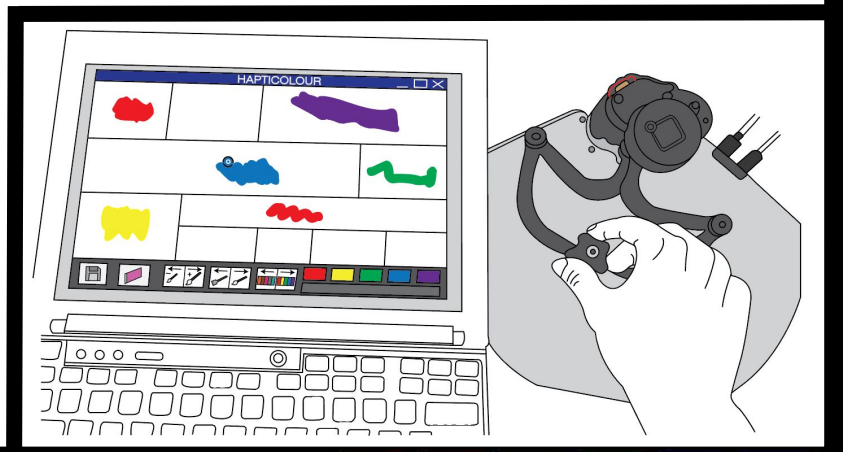
Colouring with Haptic Feedback: Two Motivating Questions

- Can we create an immersive coloring experience while providing haptic feedback using Haply?
- Is digital colouring with a haptic device as effective (or perhaps more so) than traditional colouring methods?

Proposal

What is HaptiColour?

- A haptic-assisted color platform for novice artists and enthusiasts
- Features:
  - Two modes: colouring engaged/disengaged
  - Haptic guidance along the sketch outlines
  - Haptic feedback representing the brush/surface texture
  - Minimalistic interface

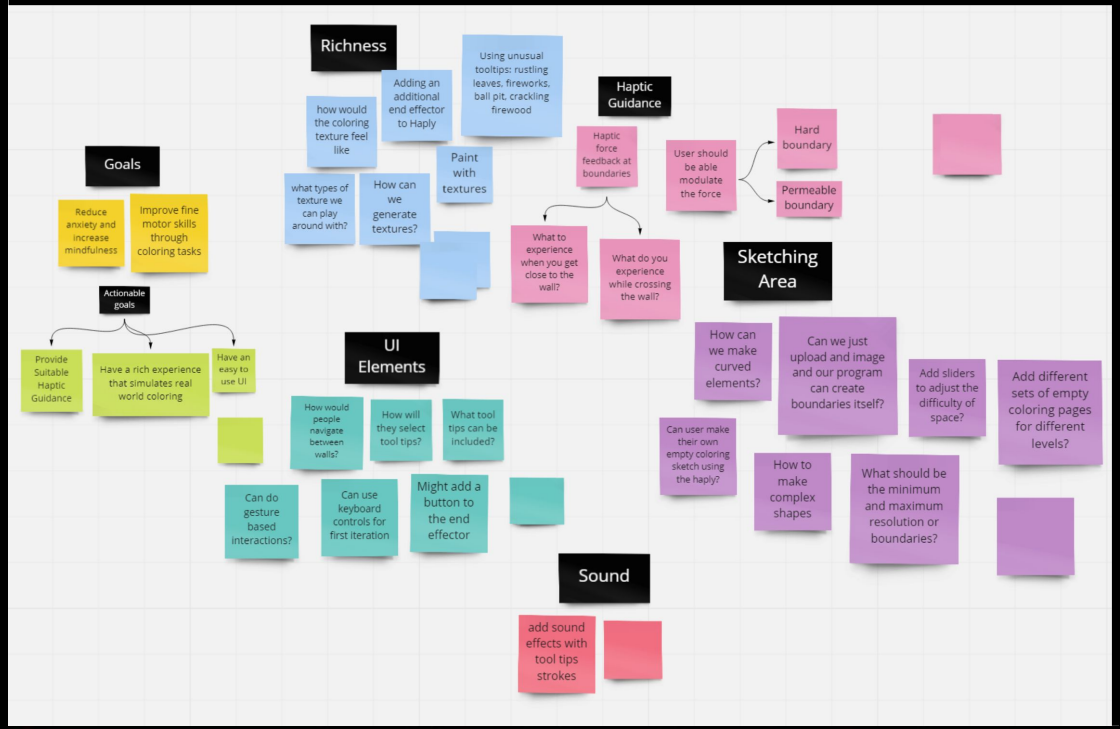


Design Process

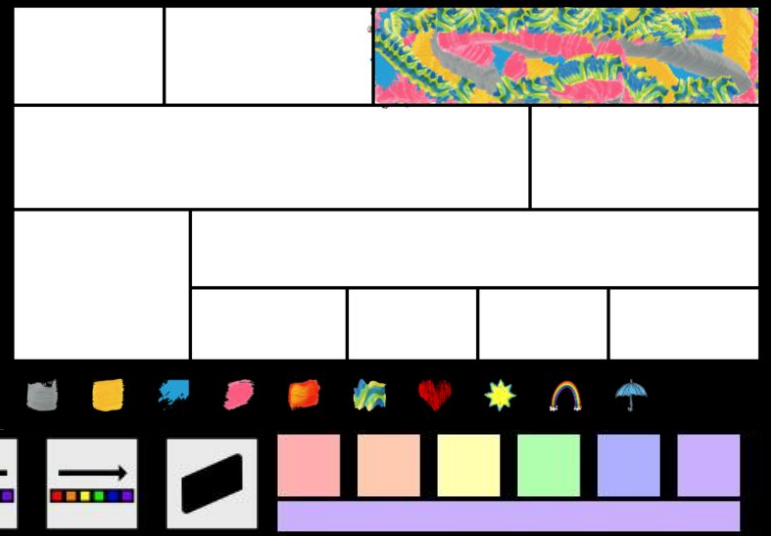
Planning Phase

- Worked remotely with same hardware/software
- Team management
  - Github, Discord, Zoom, Google Docs
  - Delegated tasks
  - Weekly meetings with advisors
  - Problem solving/debugging with classmates
- Three iterations

Iteration 1 Goals

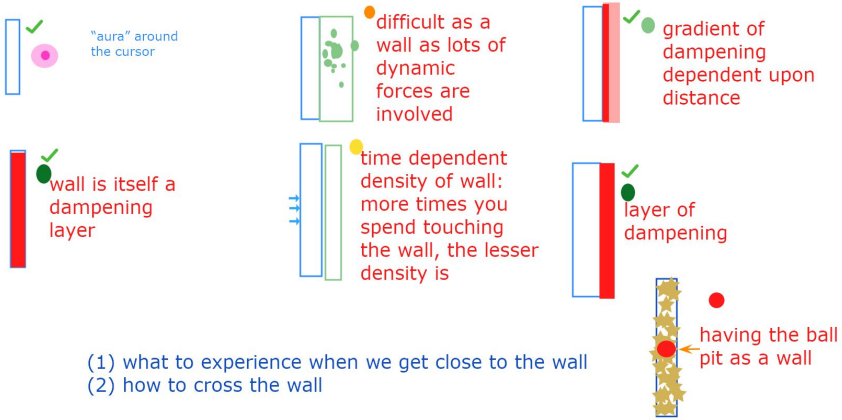


- Haptic Guidance
- Haptic Richness
- User Interface

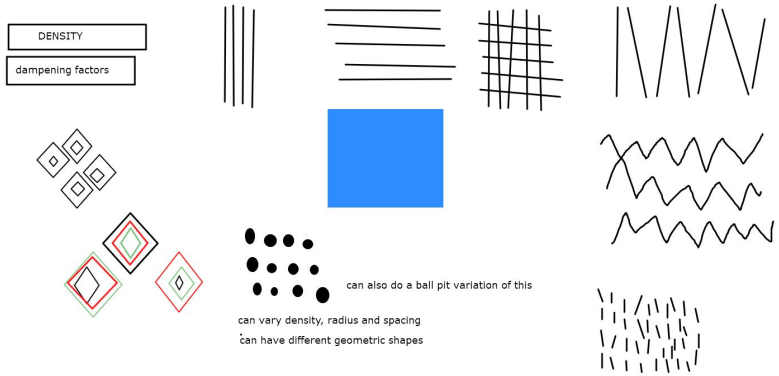


Iteration 1: Planning and Delegating

Haptic Guidance

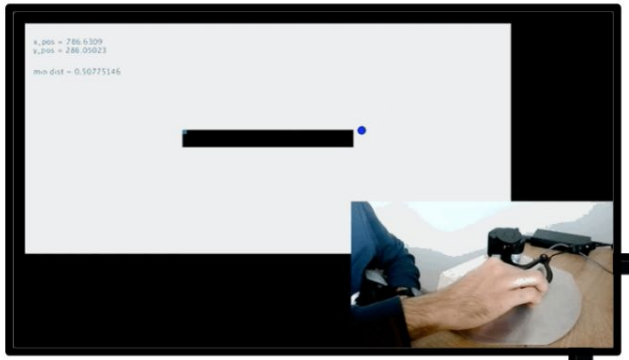


Haptic Richness

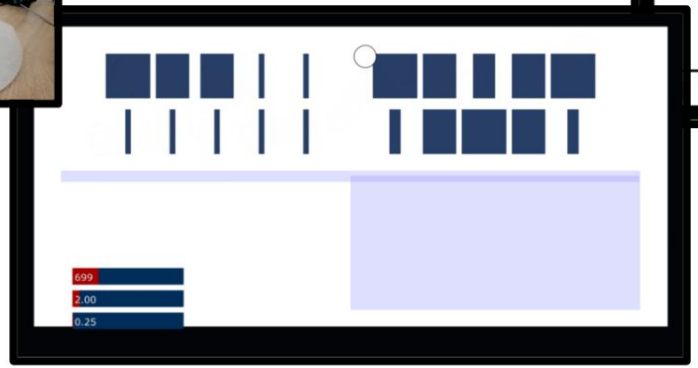


Iteration 1: Exploring the Space

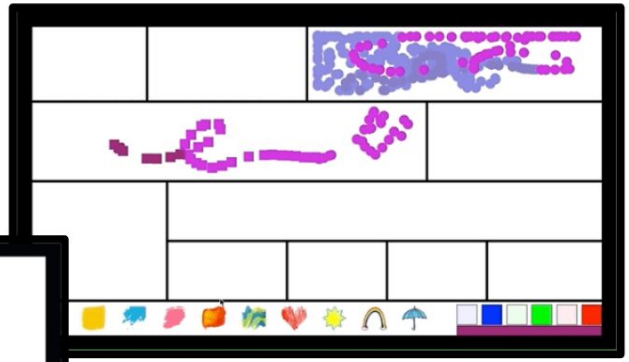
Haptic Guidance

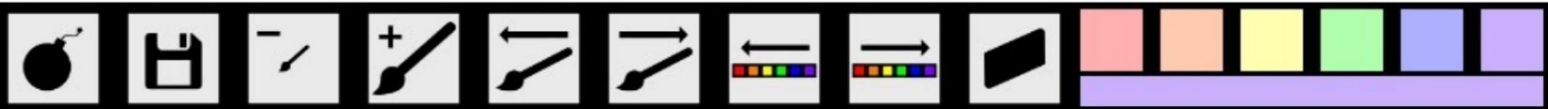


Haptic Richness



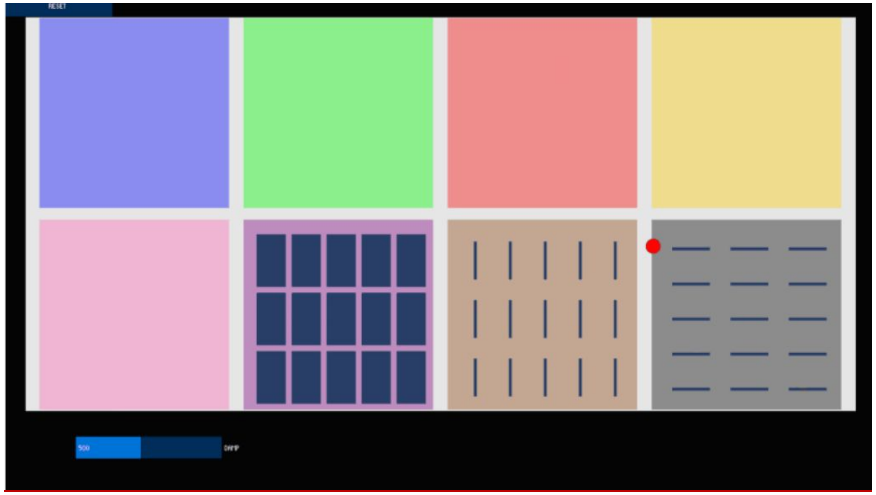
User Interface



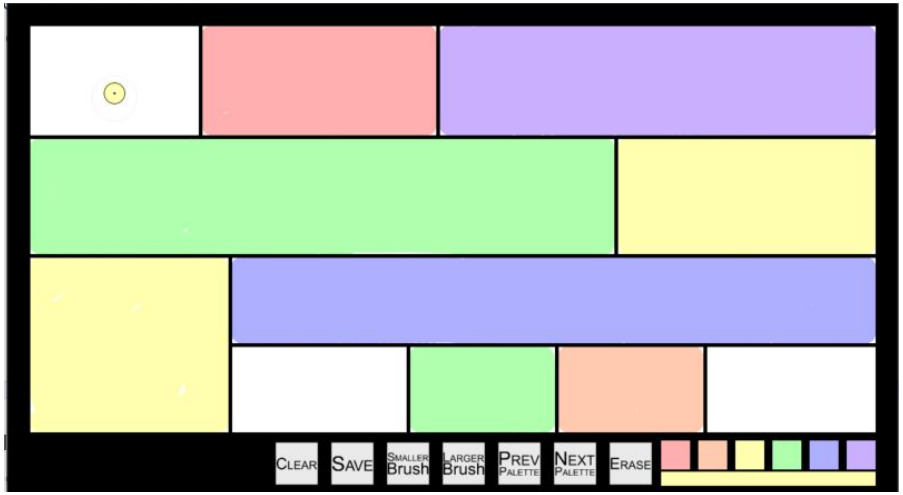


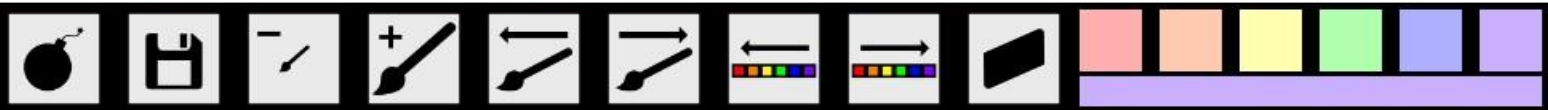
Iteration 2: Bringing it Together

Created a texture bank for testing



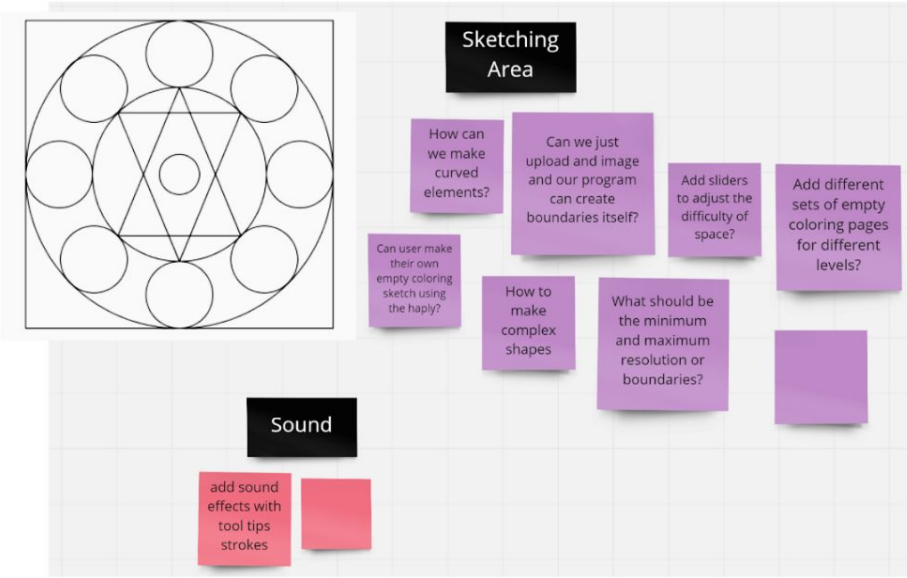
Integrated all three designs into one



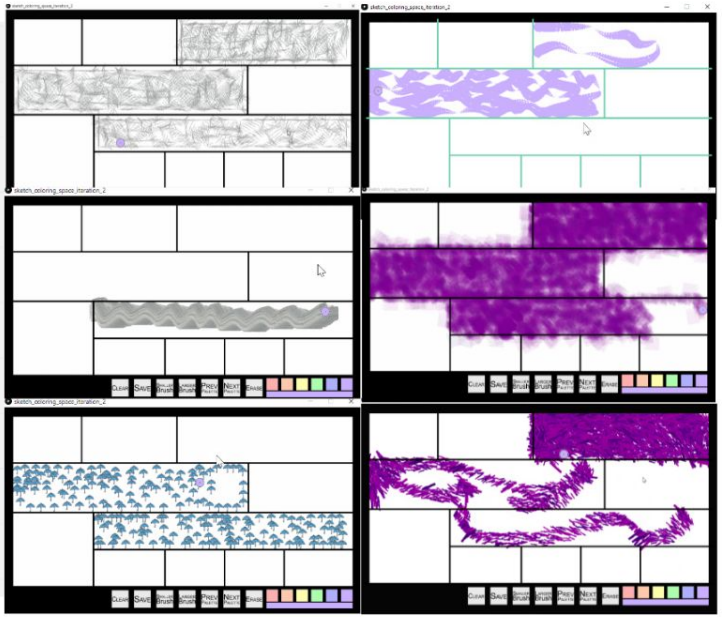


Iteration 3: User Customization

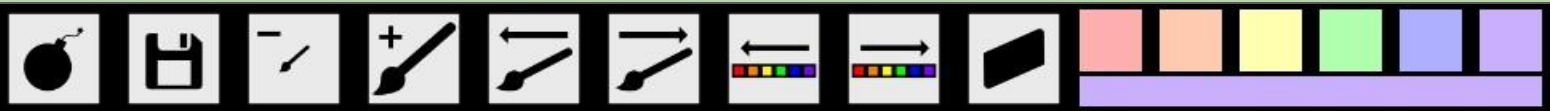
More exciting coloring sketches

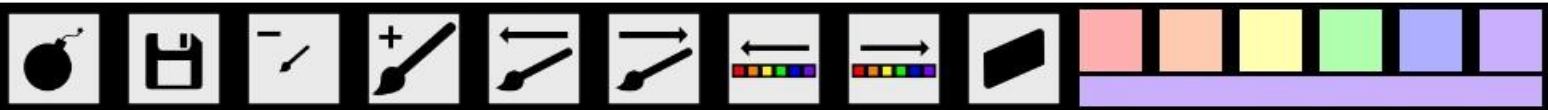


New tooltips (brushes)



Demonstration



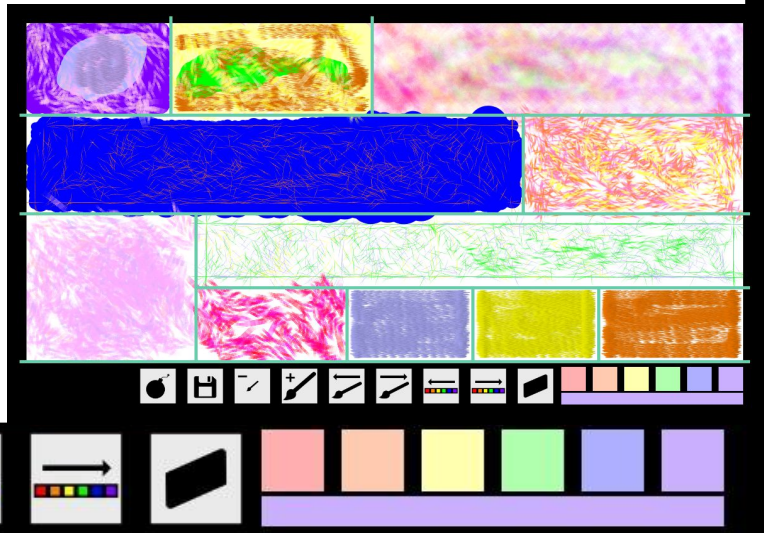


Next Steps

Future Work: Is HaptiColour Effective?

Questions to evaluate in a user study:

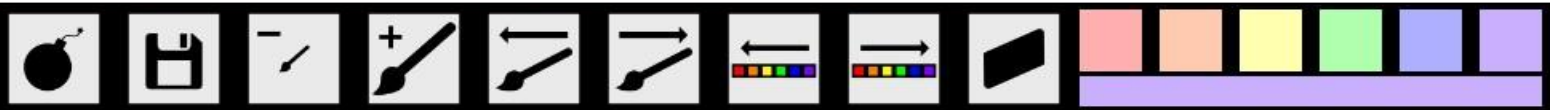
- What factors make coloring experience better?
- Does multi-modality enhances experience?
- Do certain textures or tooltips feel better than others?
- Is haptic guidance on boundaries necessary?
- Do we need a set of textures and tooltips or one engrossing experience is enough?



Future Work: What Do You Think?

Questions for the audience:

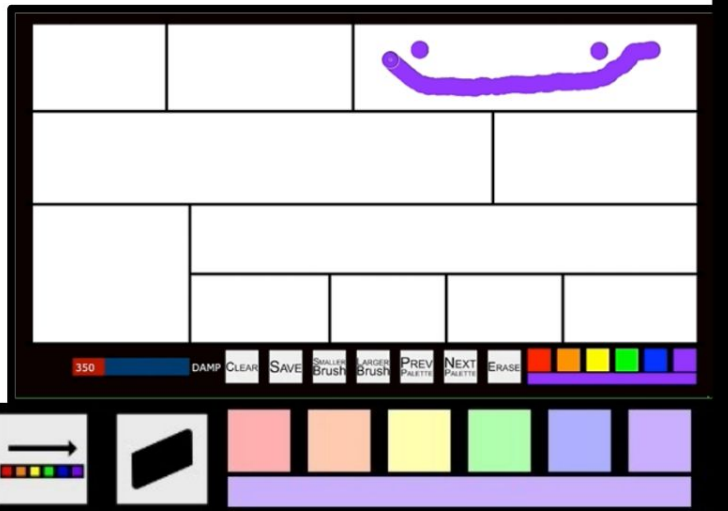
- What parts of the interface seems interesting to you?
- Would you be interested in using such interface for practising mindfulness?
- Would you prefer curated visual and haptic pairings or customizable textures?
- Would you be interested in unusual haptic texture effects like crumbling leaves, bubble wrap, fireworks or customized image based tooltips?

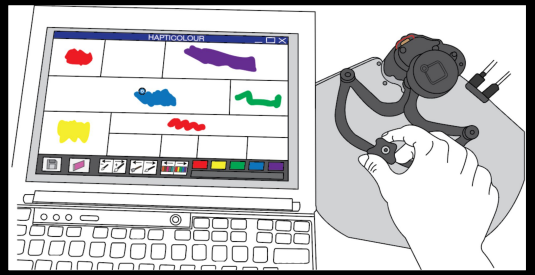


Conclusion

Main Takeaways

- Hard to explore the haptic space, when you don't know what exists
- Limitations on development
- Large design space in haptic-assisted coloring
  - it seems intriguing to general audience
  - might have potential in mental health tech





Thank You!

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Haply

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