Programming with a gamepad

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Overview

- 2 music live coding environments
- Common stuff they share
  - Gamepads
  - Ringmenus
  - Uncrashable languages
- Betablocker
  - Demo
- Al-Jazari
  - Demo
- Thoughts
Common stuff
Vague themes

- Make watching live coding a bit more accessible
- Live coding doesn't have to be about text editors
- Live coding doesn't have to be hard
Gamepads

- Analogue sticks
- Directional pad
- Right hand buttons
- Shoulder buttons
- Force feedback
- Analogue buttons
Ring Menus
Ring menus

Values from analogue stick
Ring menus

Convert to vector
Ring menus

Use magnitude to activate menu
Ring menus

Use angle to pick from items
Ring menus

- Nice tactile feel
- Good use of muscle memory
- You can pick from quite a large range
- Seems easier than mouse based 'gestures'
Uncrashable Languages
Uncrashable Languages

- Design away crashes
  - Divide by 0 returns 0
  - Invalid memory read returns 0
- Genetic programming: Tierra
- Not good for general purposes
  - Crashes stop unintended code from executing
  - Removing them makes bugs very hard to find
Uncrashable Livecoding

- Good for live coding:
  - Less chance of embarrassment!
  - Things can run out of control
  - Changes how you program
  - Malleable/brittle
- All possible programs are executable
Betablocker
Betablocker influences

- TOPLAP discussion on virtual machines ("Hello (& Chaos)" 2004)
- Corewars (Redcode)
- Forth
- Mr Driller
Betablocker

- First attempt at gamepad coding
- Virtual machine
- Multithreaded
- No memory protection
- All memory is visible
- The rhythm is a direct result of the instruction count
- Very unpredictable
Demo
Al-Jazari
Al-Jazari

- 13th century scientist and inventor
  - First recorded use of gears
  - Crankshaft
  - Mechanical clock
  - Combination lock
- Programmable humanoid robot
  - Robot musicians for royal drinking parties
Al-Jazari

(live coding for royal drinking parties)
Al-Jazari influences

- Influences
  - The Sims
  - Gullibloon's Army of Darkness
  - Simon Yuill's Spring Alpha (live coding game)
- Musical robot livecoding
- Code in 'thought bubbles'
- Indirect musical triggers
- No text
Demo
Thoughts

• Simple languages
  ◦ No abstraction, so hard/impossible to build layers
  ◦ Fun to play with
  ◦ More practice will influence the languages

• Using a gamepad
  ◦ More restricted than a keyboard
  ◦ People don't think you are programming
  ◦ People want to have a go
  ◦ Detaches you from the laptop