

Save your hands for another day

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I want to say this first: **I like to go fast.**

Last year I went 132mph in a Lamborghini Huracán Evo on a race track.
I won't give you advice that I think is slow long-term.



Background

I joined Texas A&M Transportation Institute (TTI) in 2021.

TTI is the #1 university-based transportation research agency in the United States.

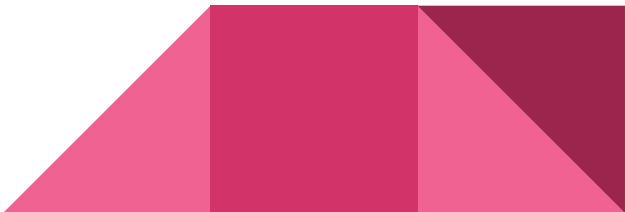
Our mission: “Saving Lives, Time, & Resources”

I work directly with data scientists and principal investigators to create web applications and other software deliverables for grant-funded research.

I plan the application, create the code, maintain databases, and provision cloud services.

TTI helped Amazon develop its drone delivery program. Their first day of US delivery happened here in College Station, Texas and Lockeford, California (source:

www.cbsnews.com/sacramento/news/amazon-prime-air-drone-deliveries-begin-in-lockeford-just-before-christmas/)



What this talk is about

When I started at TTI, my hands were already numb from carpal tunnel syndrome.

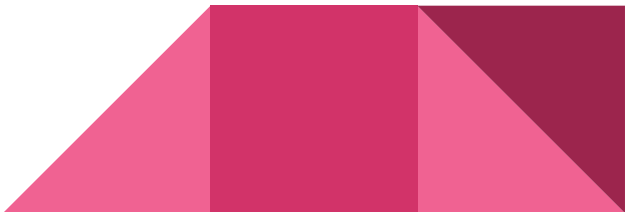
A year later, they started to hurt in the evenings.

By late 2023, they were hurting all day.

Referral to orthopedic surgeon, who ordered:

“No typing for 2 weeks.”

... and a referral to an arthritis specialist.





The way I worked was
not sustainable anymore.

Next steps

I took 1 week off from work to search for resources.

The next week, I used voice tools almost exclusively at the office.

This has been one of the hardest things I've ever done.

After seeing the arthritis specialist and getting tests, he tells me this:

“Rheumatoid blood tests negative. [...] No synovial fluid in your finger joints. [...] A few bone spurs. [...] Osteoarthritis. [...]”

I was devastated, but I have learned to be resilient.



Solutions I have tried

Eye tracking camera

Face & head tracking

Foot pedals

Trackball / vertical mouse

Split mechanical keyboard

Voice dictation

Better microphone

Mac Shortcuts app

Keyboard shortcuts

IDE settings

Test automation

CI workflows

Code scaffolding

GitHub Copilot

Talon Voice

Hooks (pre-commit, agents)

Solutions I use today

Face & head tracking

Foot pedals

Split mechanical keyboard w/ trackballs

Voice dictation

Better microphone

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Demo time.



Now for the details.

Speech solutions

EPOS Impact 860 ANC headset.

Mac OS dictation w/ keyboard shortcut (press ctrl twice to start dictation, press once to stop).

Talon Voice software for computer use and code dictation.



Speech solutions: dictation

There can be misinterpretation in some words but it doesn't seem to matter much when submitting to a LLM:

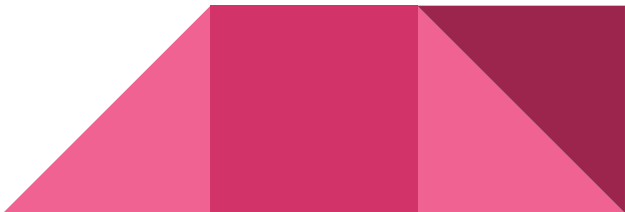
to != two

for != four

right != write

etc...

Mac allows you to declare custom words and provide matching speech samples. This is useful for proper nouns and person names.



Speech software: Talon Voice

Free cross-platform voice command application with local voice models. I use it on Mac at work and Windows at home.

 ***There is a learning curve.***

Talon+ is the premium version with more features and more frequent updates

I contributed PHP language improvements to the community repo.

You can create your own commands!

Examples:

Say “screenshot” to take a screenshot

“refresh it hard”: clear browser cache, refresh page

“snap left”: move and resize the active window within the left half of the monitor

“pub funky hello world”: insert “`public function helloWorld()`” while editing PHP in VS Code

“git stage”: stage the currently open file in VS Code

“command mode” or “dictation mode”: switch between Talon Voice modes

Ergonomics

Face & head tracking (occasionally) used as a mouse replacement.

Talon Voice lets me run Mac Shortcuts commands to toggle face & head tracking by saying “head up” or “head down”.

Keyboard shortcuts & VS Code tasks let me type less.

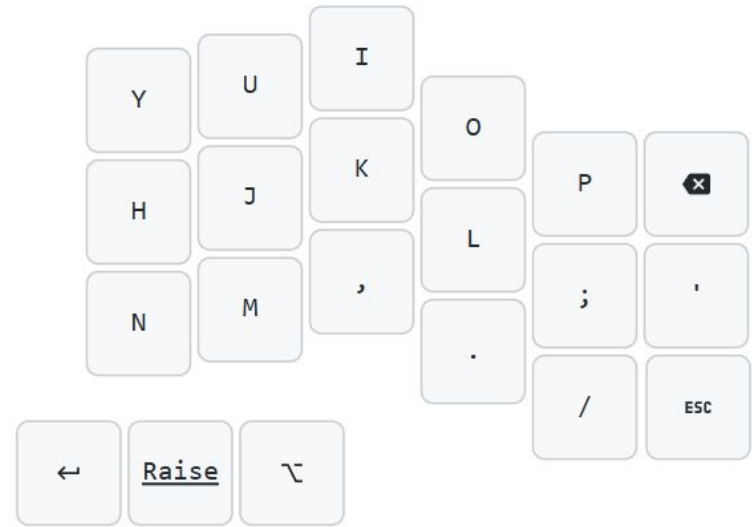
Foot pedals: Kinesis Savant Elite2 Dual Pedal

Split mechanical keyboard w/ trackballs & mouse keys:

1. Bridges v2 wireless split 42 key keyboard with 4 key layers.
 2. Kailh Choc Purpz 25g mechanical linear key switches for easier key presses.
 3. Hardware for positioning: adhesive metal rings, magnets, threaded positioning arms, and clamps.
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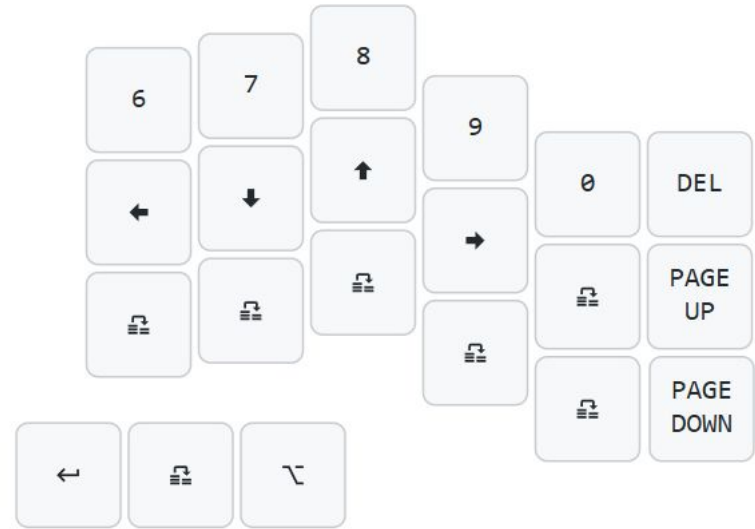
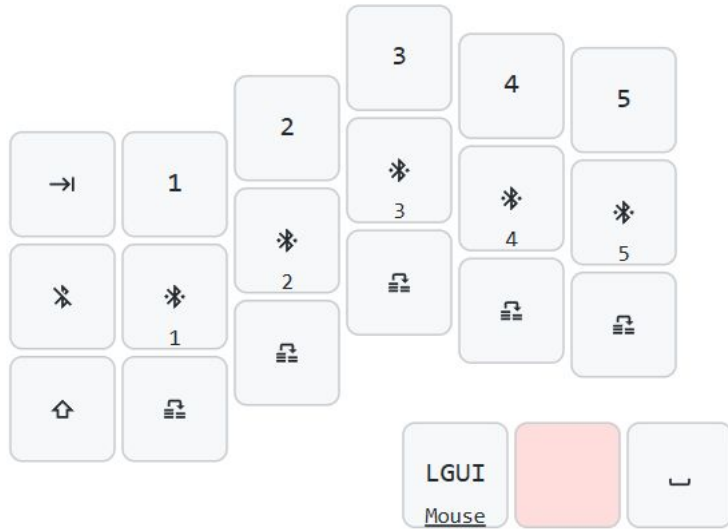
Ergonomic devices: keymap (base layer)

Base:



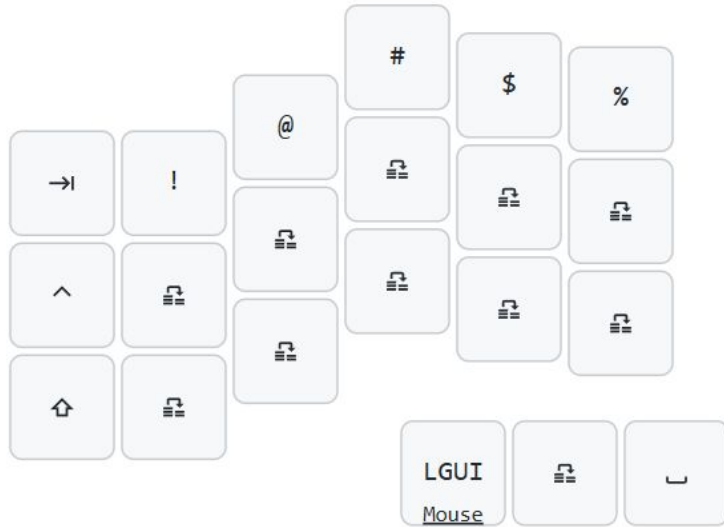
Ergonomic devices: keymap (lower layer)

Lower:



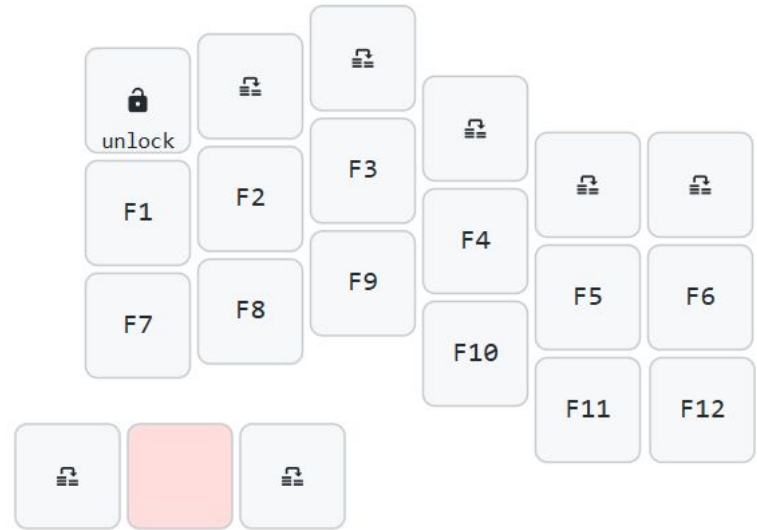
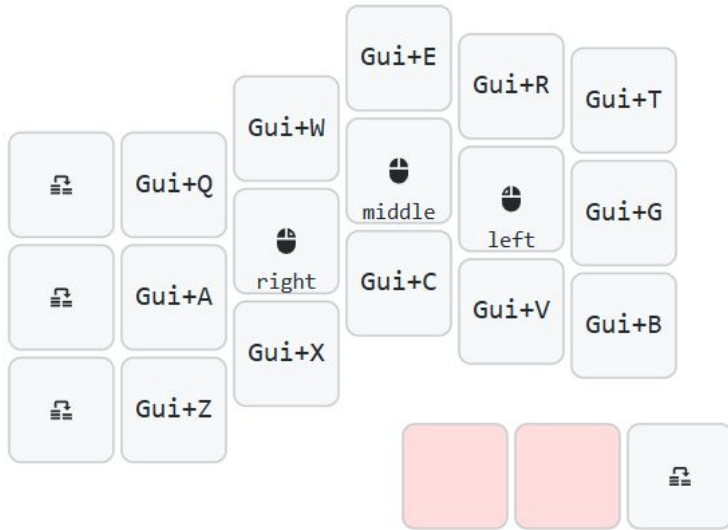
Ergonomic devices: keymap (raise layer)

Raise:



Ergonomic devices: keymap (mouse layer)

Mouse:



AI tools

I use GitHub Copilot with VS Code.

An agent skill executes my PHP CLI app using voice dictation prompts. Agent steps:

1. Run the app to read data and create a Laravel Shift Blueprint file.
2. Pass the Blueprint to the Blueprint CLI which scaffolds Laravel code.

Coding agent hooks format generated code.

AGENTS.md files and other coding agent conventions reduce time re-working generated code.

Playwright MCP provides browser context to an agent when generating code and browser tests.



Automation

IDE settings auto-save, auto-format, auto-fill GitHub pull requests, and auto-approve GitHub Copilot agent commands.

Pre-commit hooks format and check code.

Tests use Playwright, PHPUnit, or Pest.

CI workflows run tests, audit packages, and deploy.

Goal: Make the tools tell you when something is wrong quickly.



Automation: Blueprint (by Shift)

Blueprint is a Laravel extension by Shift which scaffolds Laravel files from a single YAML file.

blueprint.laravelshift.com

Example blueprint.yaml ->

```
`php artisan blueprint:build blueprint.yaml`
```

This is great for talking to my clients about their data model, and changing it.

```
models:
  Post:
    title: string:400
    content: longtext
    published_at: nullable timestamp

  Comment:
    post_id: id
    content: longtext
    user_id: id

  User:
    name: string

seeders: Post, Comment
```

What I recommend you take away from this talk:

Use voice dictation as much as possible.

Check out Talon Voice for hands-free computer use and voice coding.

Use or build code scaffolding tools, especially Blueprint (by Shift) for Laravel app development.

Consider a mechanical keyboard with light touch switches and a short range of motion (choc style).

Save time with keyboard shortcuts, browser tests, and process automation.

Let tools tell the LLM when it's doing something wrong.



Resources

talonvoice.com

Talon community repo:
github.com/talonhub/community

My PHP CLI app:
github.com/ZachWatkins/infer-laravel-blueprint

My Talon setup:
github.com/ZachWatkins/user-talon

Foot pedals:
kinesis-ergo.com/shop/savant-elite2-dual-pedal

Keyboards similar to what I use today:
boardsource.xyz/collections/premium-product

My keyboard switches:
kailhswitch.net/products/kailh-low-profile-chocolate-keyboard-switch-rgb-smd-mechanical-keyboard-linear-hand-feeling-25g-purpz-switch

Laravel links:

laravel.com
blueprint.laravelshift.com

Mac voice command features:
support.apple.com/guide/mac-help/accessibility-features-for-mobility-mchl654a7cc7/27/mac/27

Keyboard mounting hardware on Amazon
(not affiliate links):

C Clamp: a.co/d/0j1rwfJF

Arms: a.co/d/0bbPBeQA

Magsafe Disks: a.co/d/00IBH9eb

Metal Rings: a.co/d/0cpvmHux

My custom keyboard maker's GitHub:
github.com/Good-Great-Grand-Wonderful

Questions?

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X: [@zachwatkinsv1](https://twitter.com/zachwatkinsv1)

