NeuroVeTele App

A Neurolocalization App for Dogs and Cats

CS 4624 | Edward Fox |Multimedia, Hypertext, and Information Access,

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Outline

Introduction

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Sample Walkthrough of a Neurolocalization

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Introduction

Recap of NeuroVeTele

- Client: Dr. Richard Shinn
- Neurolocation
- NeuroVeTele
- Plans for Multiplatforming and Monetization

Progress Check

January

- Problem Identification and Brainstorming
- Consultation with Dr. Shinn

February

- Client Design Mockup
- UML & Figma Design Completion

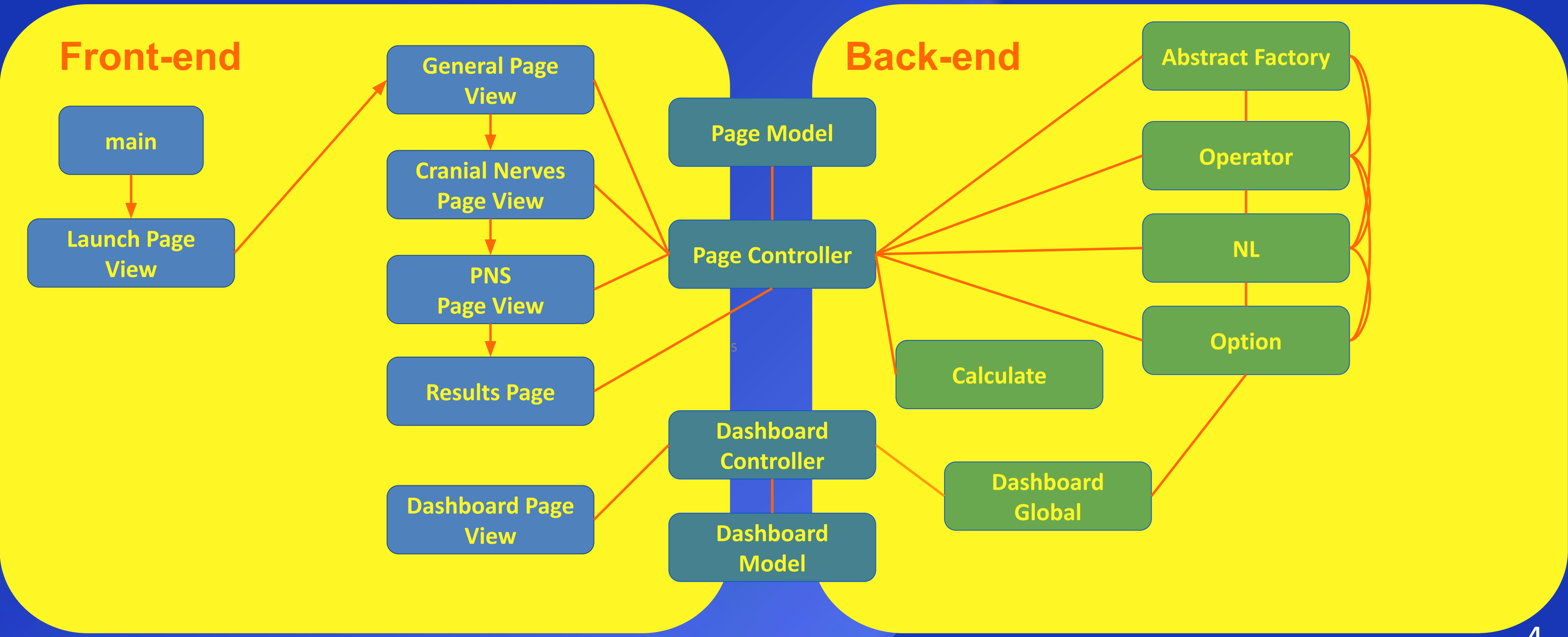
March

- Backbone of Front-end and Back-end
- Alpha Testing

April

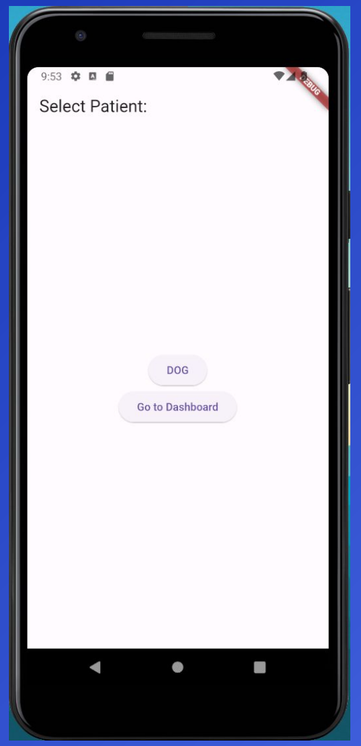
- More Features
- More Testing

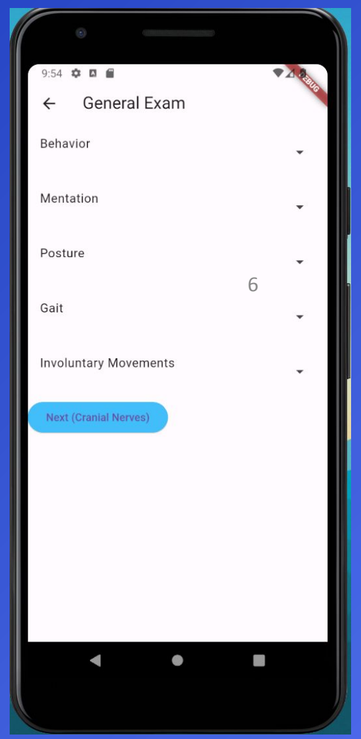
Current Design

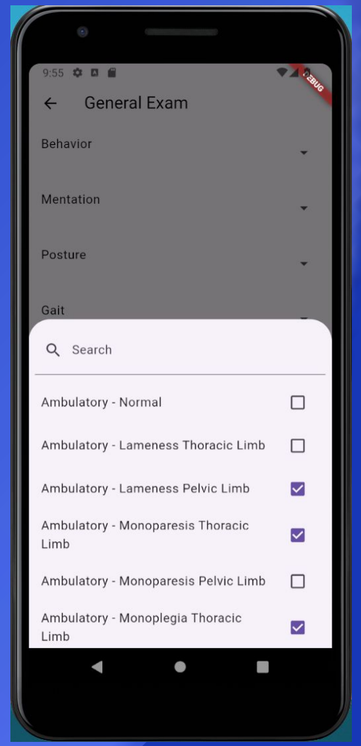


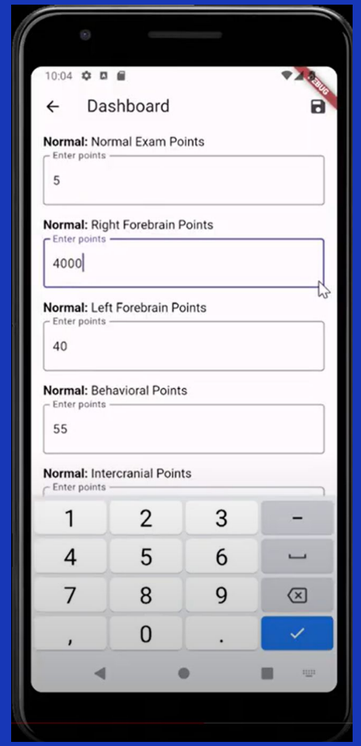
Front-end

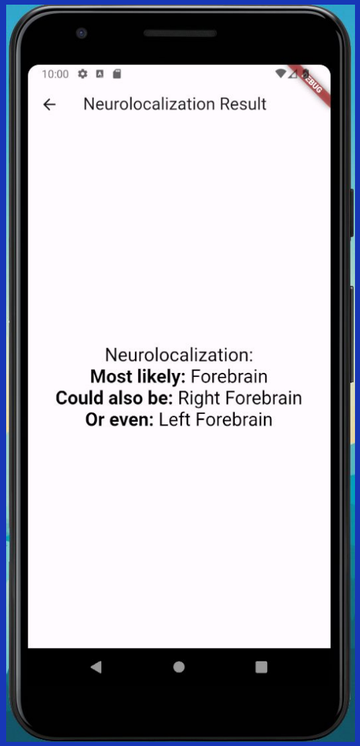
- Main -> General Page -> Cranial Page -> PNS Page -> Results
- MVC system
- Dashboard





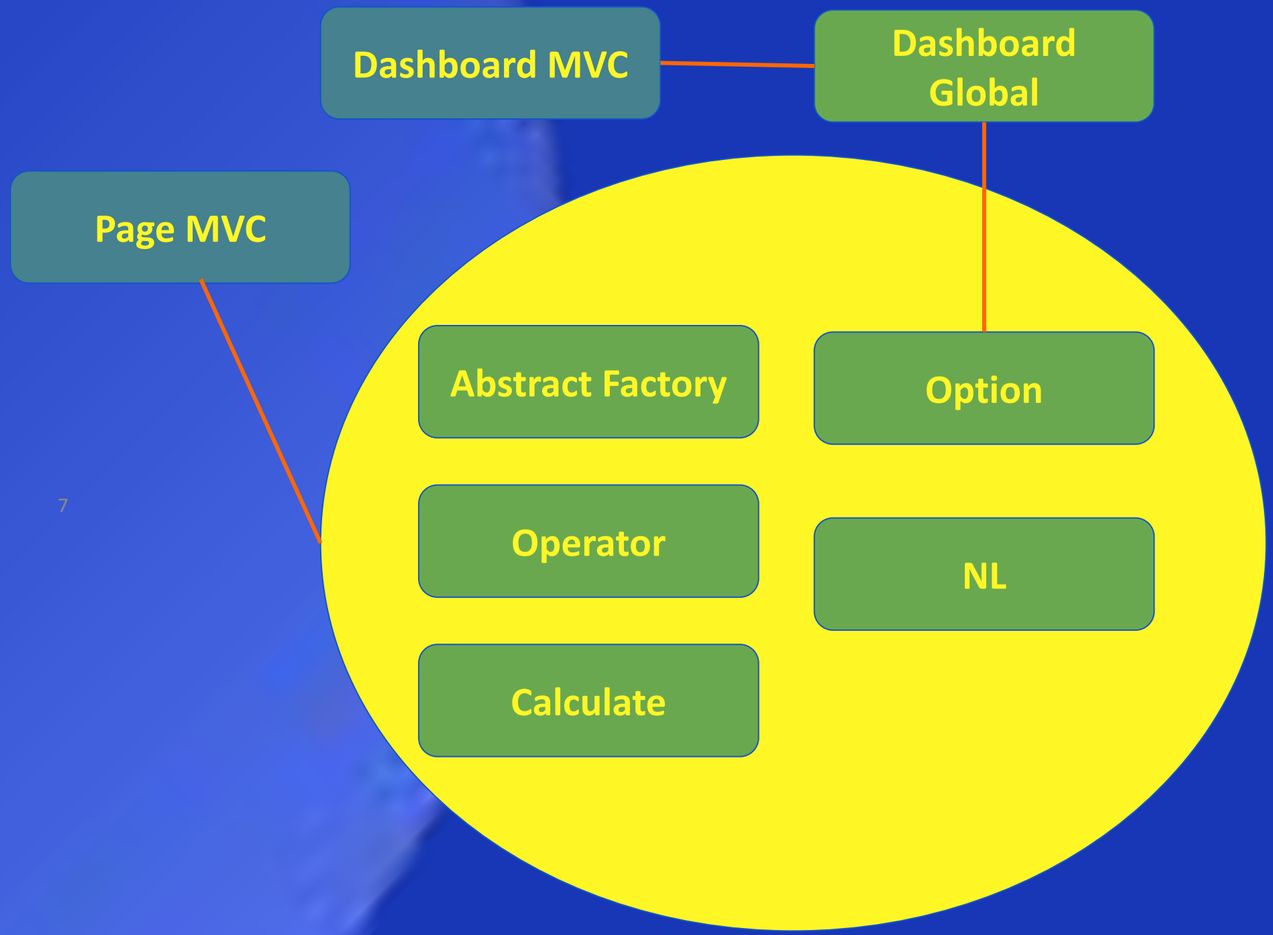






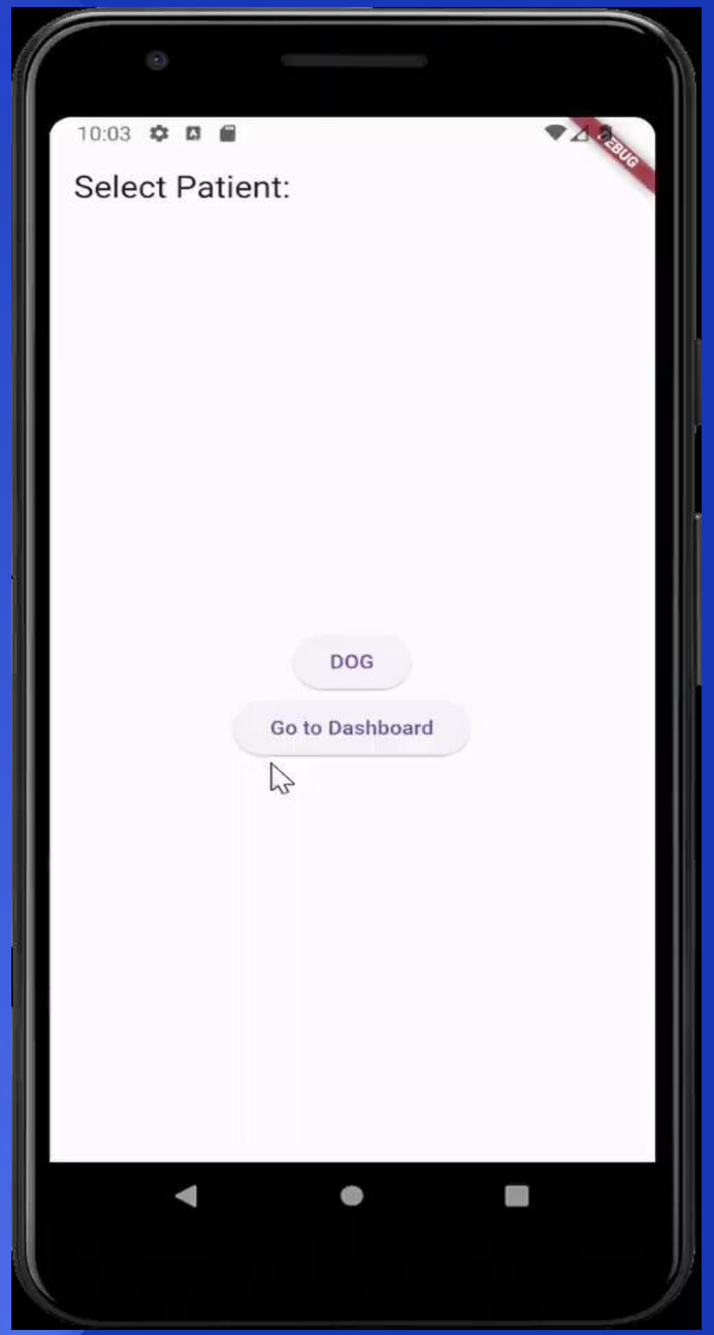
Back-end

- Dashboard update to design
- Connection to MVC
- Proliferation of inputs
- Calculation of the weights



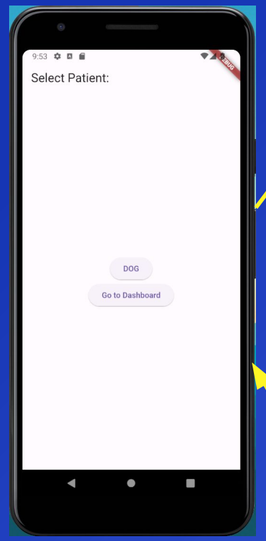
Demo

- See accompanying file NeuroVeTeleDemo.mp4:

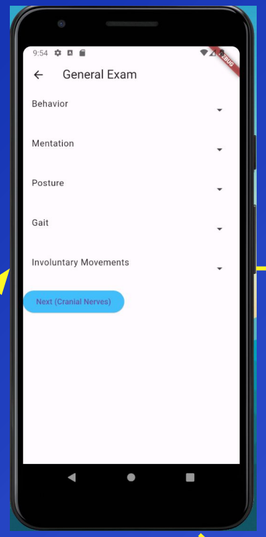


Demo Sequence

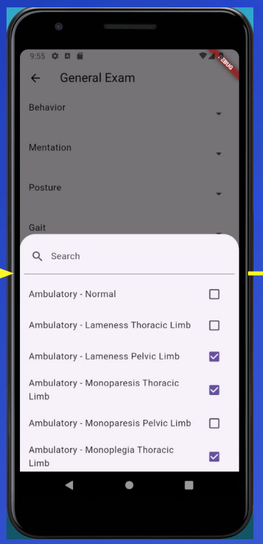
Launch



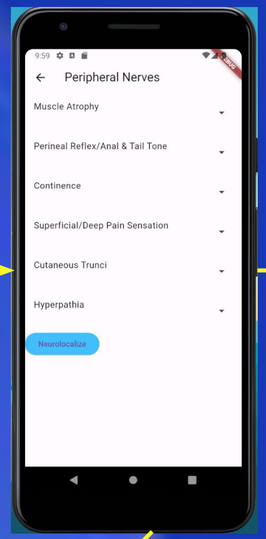
General



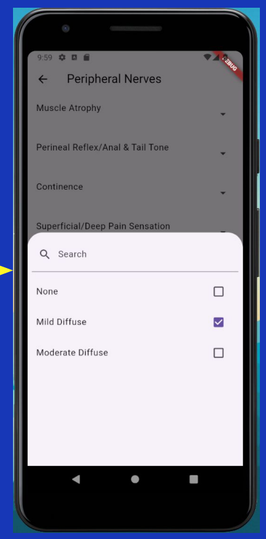
General Options



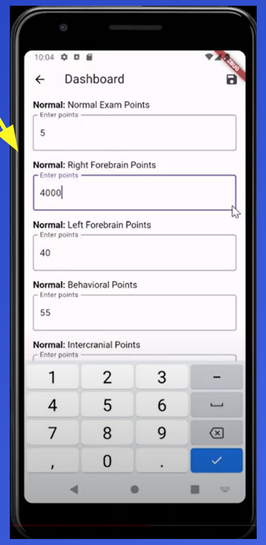
PNS



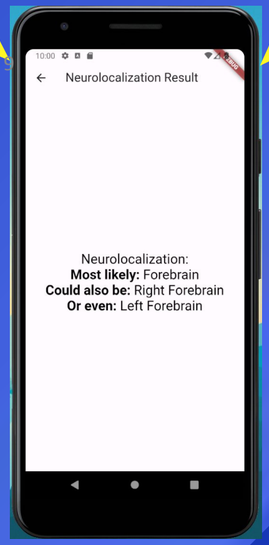
PNS Options



Dashboard



Result



Challenges

- Embed new features into the current patch

Motor Activity	
Normal gait and reflexes	6
Hemi/tetraparesis or decerebrate activity	5
Recumbent, intermittent ext. rigidity	4
Recumbent, constant ext. rigidity	3
Recumbent, constant ext. rigidity & opisthotonus	2
Recumbent, hypotonic muscles or decreased to absent reflexes	1

MSCS Score	Prognosis
3-8	Grave
9-14	Guarded
15-18	Good

In the face of head trauma, the fo

Brain-stem reflexes	
Normal PLR & Oculocephalic reflex (OCR)	6
Slow PLR, normal to decreased OCR	5
Miosis OU, normal to decreased OCR	4
Pinpoint pupils, decreased to absent OCR	3
Unilateral, unresponsive mydriasis, decreased to absent OCR	2
Bilateral, unresponsive mydriasis, decreased to absent OCR	1

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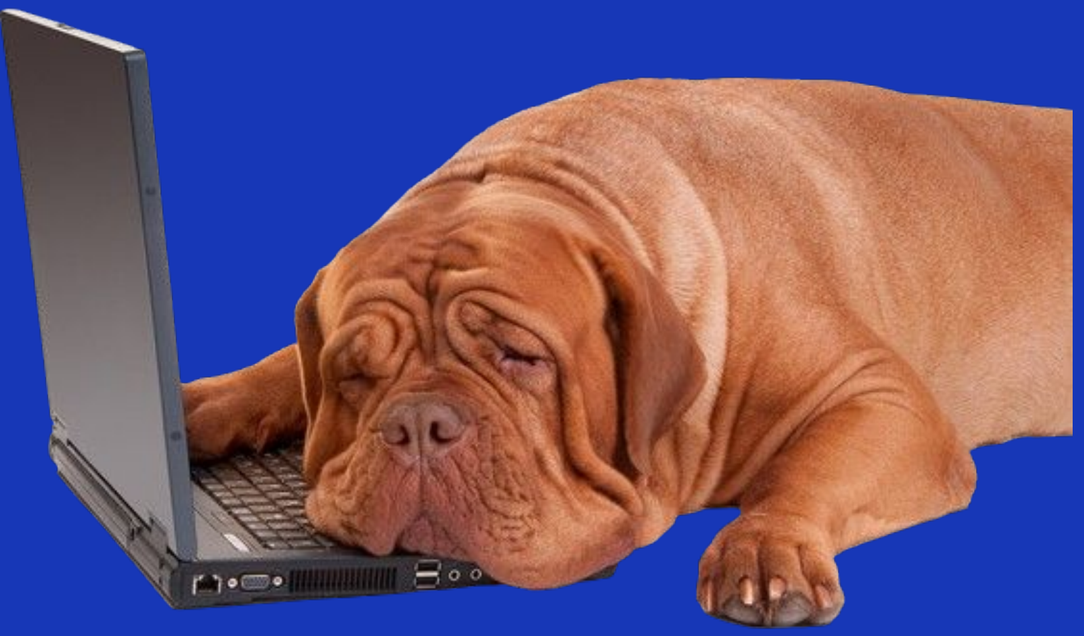
another point system required by the client during the weekly meeting

Challenges

- Entry of a huge point system

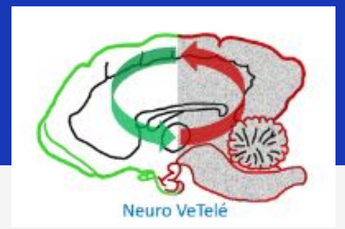


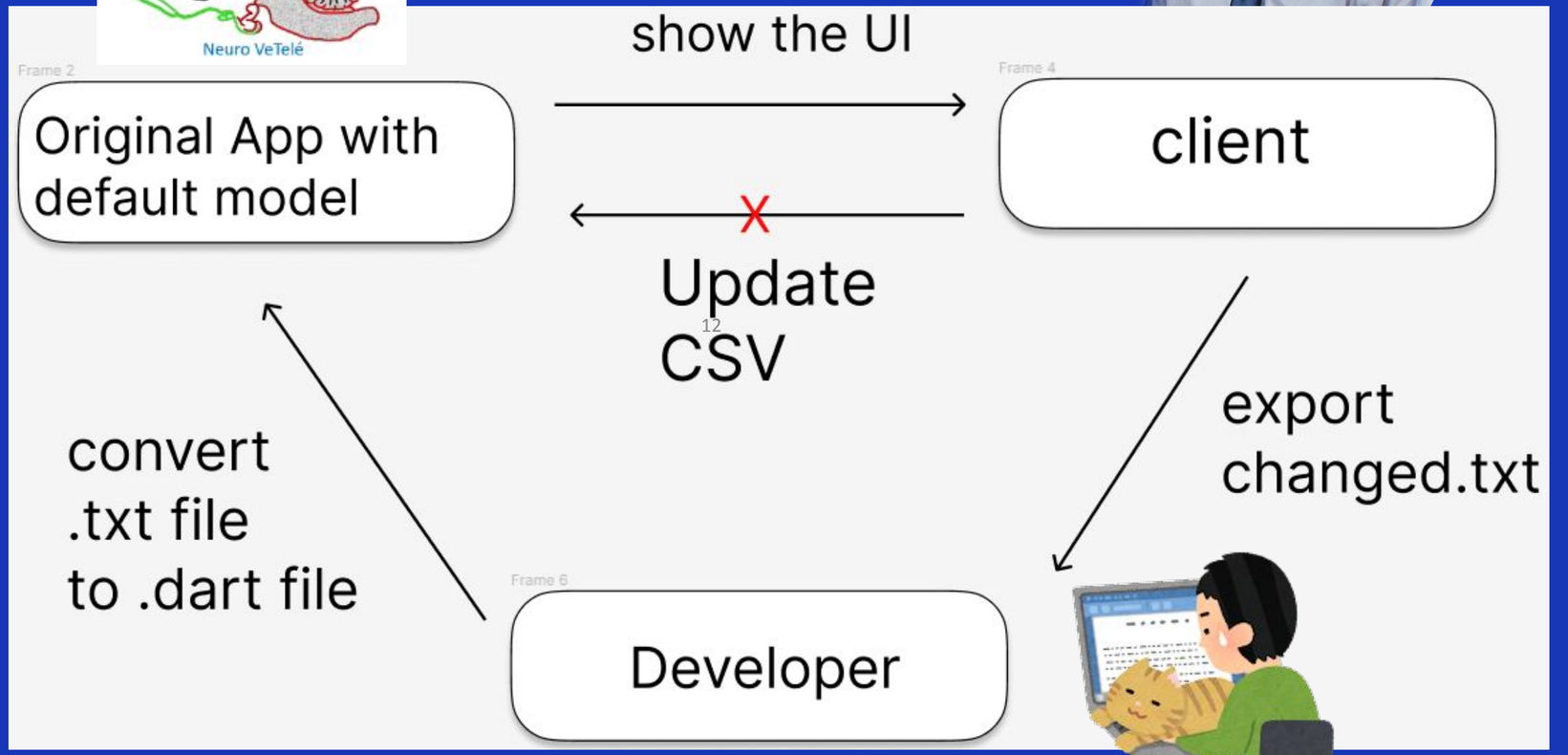
728				Intracranial	5
729				Non-specific Pain	5
730				Ophthalmic/Pre-chi	20
731			Enucleated		Cannot Evaluate
732		Pupillary Light Ref	Normal	Normal Exam	1
733			1	Brainstem	10
734				Ophthalmic/Pre-chi	20
735				Oculomotor Nerve	18
736			0	Brainstem	10
737				Ophthalmic/Pre-chi	20
738				Oculomotor Nerve	18
739			Enucleated		Cannot Evaluate
740					

On April 3, 2024 there were 739 lines. The number can be significantly increased.

Challenges

- CSV update technique





Challenges

- Neuro Exam Data on other sections

✅ Data received

🟥 Data have not been received

- Involuntary Movement ✅
- Behavior ✅
- Mentation ✅
- Posture ✅
- Gait ✅
- Cranial Nerves
  - Vision ✅
  - Menace ✅
  - Pupil Size ✅
  - PLR 🟥
  - Strabismus 🟥
  - ……

- Proprioception 🟥
- Spinal Reflexes 🟥
- Muscle Atrophy 🟥
- Perineal Reflex/Anal & Tail Tone 🟥
- Continence 🟥
- Superficial/Deep Pain sensation 🟥
- Cutaneous Trunci 🟥
- Hyperpathia 🟥

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Future Work

- **Set up server**

  We hope the server could receive the point system edited by the user and update the config file.

- **Test with veterinary students**

  The software has only had a brief test with customers so far, but has not yet been put to use with the target audience.

- **Transition to other animals, like horse and cat**

  The app could easily support other animals with extra point system data based on the framework.

- **UI improvements**

  The UI can include a color scheme that reflects the VT theme, as well as adding more icons to reduce text.

Acknowledgements

Dr. Richard Shinn | Dr. Edward Fox | Satvik Chekuri | Dr. Yang Cao

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References

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