

# Team 5: Traffic Simulator Input/Output GUI

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CS 4624: Multimedia and Hypertext Lab  
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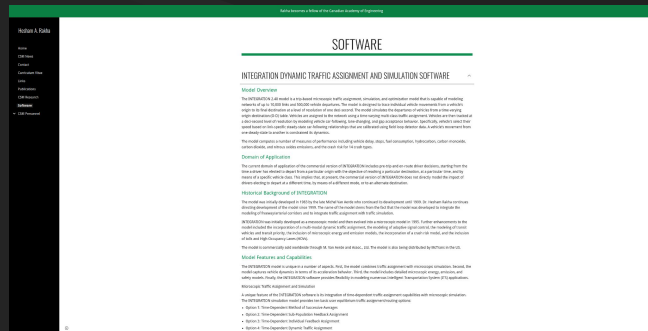
# Outline

- Problem/Motivation Recap
- Features Implemented (1-5)
- Timeline/Milestones
- Acknowledgements
- References



# Problem/Motivation

- Manage simulation input files for INTEGRATION 2.40 traffic assignment/simulation/optimization model
- Simulation input files hard to track by hand
- Simulation input files hard to check for correctness
- Template values for traffic demand
- Build a web GUI to create, edit and manage input files





QNET Node file

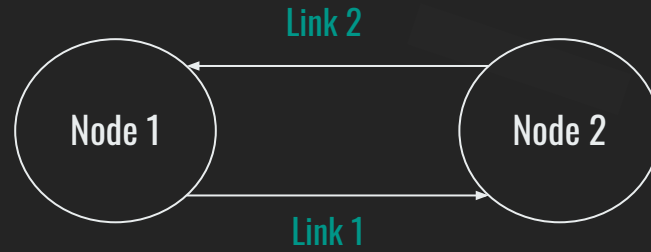
```
2 1 1.0
1 1 1 1 -1 1
2 2 2 1 1 1
```

Node ID  
X  
Y

QNET Link File

```
2 1.0 1.0 1.0 1.0 1.0
1 1 2 1 20 100 1 0 10 10 0 0 0 0 0 0 00000 11111
2 2 1 1 20 100 1 0 10 10 0 0 0 0 0 0 00000 11111
```

Link ID  
Upstream Node ID  
Downstream Node ID





### QNET Node file

```
2 1 1.0
1 1 1 1 -1 1
2 2 2 1 1 1
3 3 2 1 2 1
4 2 3 1 -2 1
```

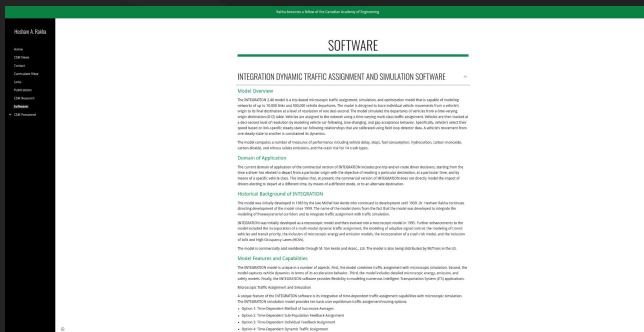
### QNET Link File

```
2 1.0 1.0 1.0 1.0 1.0
1 1 2 1 20 100 1 0 10 10 0 0 0 0 0 0 0 0 00000 11111
2 2 1 1 20 100 1 0 10 10 0 0 0 0 0 0 0 0 00000 11111
3 1 3 1 20 100 1 0 10 10 0 0 0 0 0 0 0 0 00000 11111
4 4 2 1 20 100 1 0 10 10 0 0 0 0 0 0 0 0 00000 11111
```



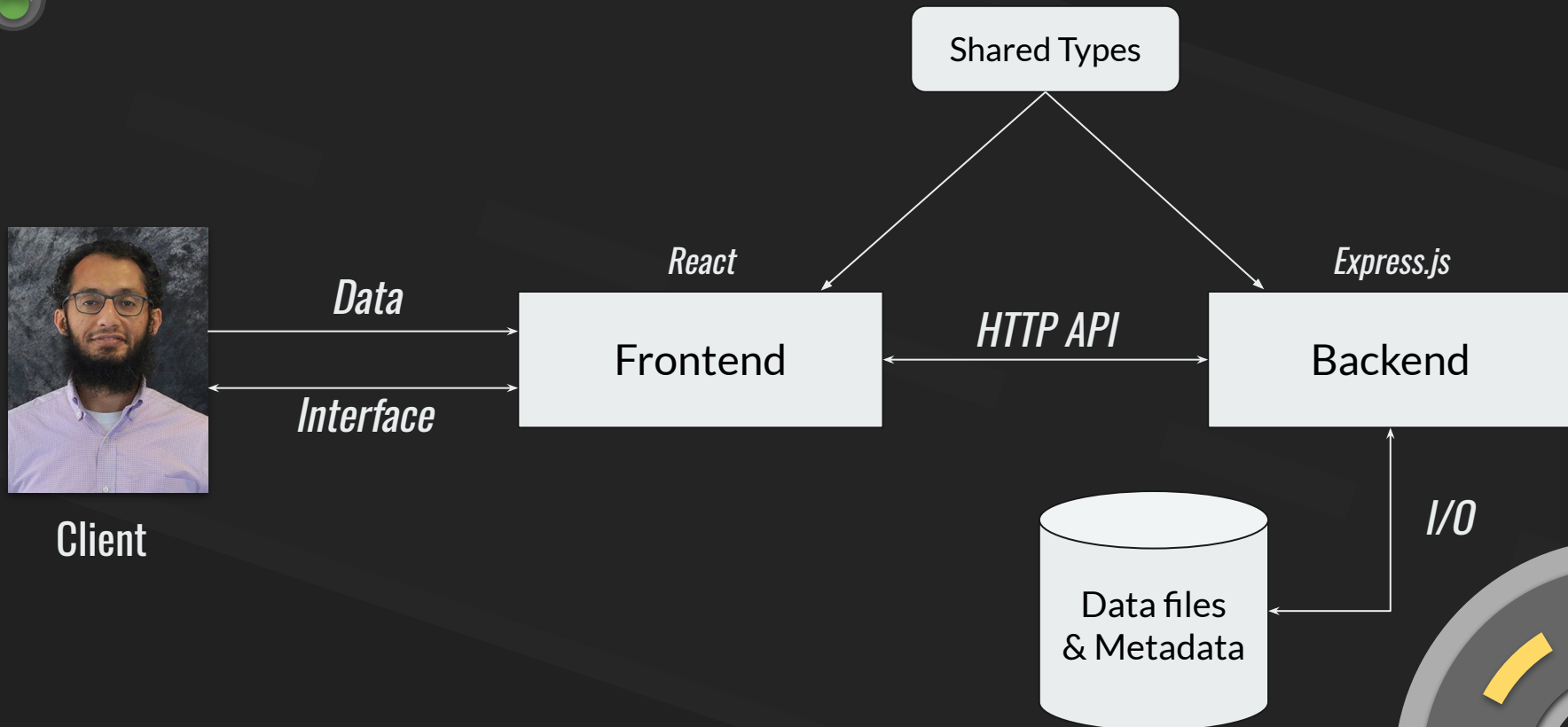
# Problem/Motivation

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# Architecture

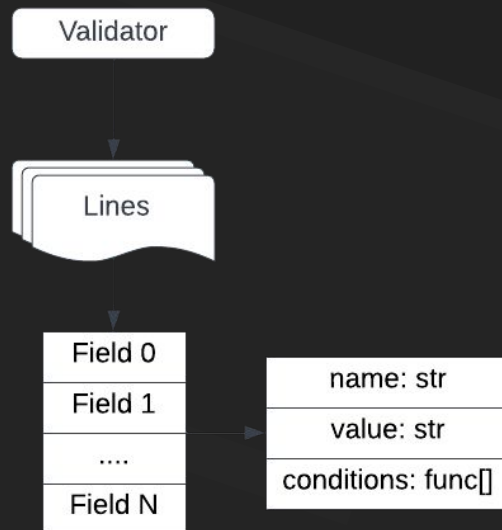


Client



# Feature 1: Validation and Meta-validation

- Conditional Parsing of Input Files
- Example of validation (file title field):
  - $0 \leq (\text{title length}) \leq 300$
- Example of meta-validation (Number of lanes blocked):
  - $0 \leq \text{Num Blocked (In Incident File)} \leq \text{Num Lanes (In Link File)}$





# Feature 2: Form Input

- Separate sections for each file
- Allows for uploading a file or creating a new one

Name: Test

Master File    Node File    Link File    Signal File    Demand File    **Incidents File**

Upload Incident Descriptor File  
Choose File | No file chosen

Title:  
Incidents

INCIDENT RECORD NUMBER	LINK ID	NUMBER OF LANES BLOCKED	SIMULATION TIME SINCE START	SIMULATION TIME TO END	
1	1	1	0	1	Remove
2	1	1	0	1	Remove
3	1	1	0	1	Remove

Add 1 more incident

Validate Package

Save Package

Download Package as Zip

Back to List View



# Feature 3: Validation GUI

- Fields are validated and any errors are shown inline
- Files must validate before saving

Name Test

Master File Node File Link File Signal File Demand File **Incidents File**

Upload Incident Descriptor File  
Choose File No file chosen

Title:  
Incidents

Incidents

INCIDENT RECORD NUMBER	LINK ID	NUMBER OF LANES BLOCKED	SIMULATION TIME SINCE START	SIMULATION TIME TO END	
1	1	1	0	0	Remove
End Time: Must be after start time					
2	1	1	0	1	Remove
3	1	1	0	1	Remove

Add 1 more incident

Validate Package

Save Package

Download Package as Zip

Back to List View



## Feature 4 - Saving of Files to Backend

- Each “input package” has a UUID
- SQLite database stores names and modification times

### Select traffic simulator input package

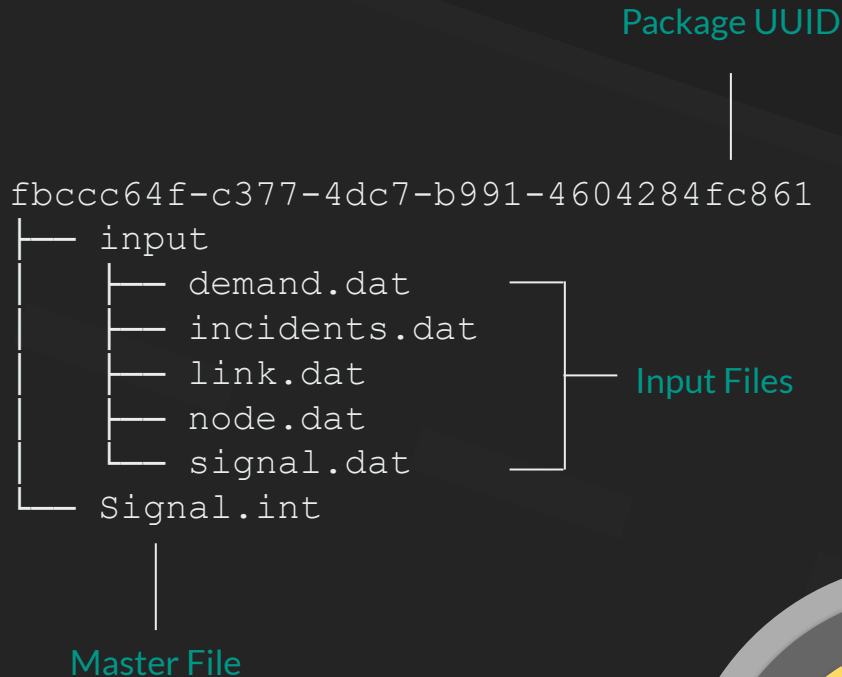
Test ^

Last Modified: 11/11/2023, 12:11:17 PM

Edit Download Copy

Test 2 v

New Package





# Feature 5 - Templating of Demand File

- Traffic demand between different points
- Important feature for client
- Templates are stored in the SQLite database
- When downloading, the GUI substitutes in the values
  - All the different versions are included in the zip file

Demand Templates

DEMAND LINE	VEHICLE CLASS	START	END	STEP	
<input type="text" value="1"/>	<input type="text" value="1"/>	<input type="text" value="0"/>	<input type="text" value="1"/>	<input type="text" value="0.5"/>	<input type="button" value="Remove"/>
<input type="button" value="Add"/>					

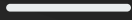
```
Input_package.zip
├── input
│   ├── demand_0.0.dat
│   ├── demand_0.5.dat
│   ├── demand_1.0.dat
│   ├── incidents.dat
│   ├── link.dat
│   ├── node.dat
│   └── signal.dat
├── Signal_0.0.int
├── Signal_0.5.int
└── Signal_1.0.int
```



# Next Steps

1

Deploy to internal server



2

Ensure functionality of  
deployed server



3

Finish Report



# Acknowledgements

- Professor Mohamed Farag
- Michel Van Aerde (not pictured)
- Hesham A. Rakha, Ph.D





## References

“Mohamed Farag.” *Virginia Tech Transportation Institute*,  
[www.vtti.vt.edu/staffdir/bio.php?&pn=04208](http://www.vtti.vt.edu/staffdir/bio.php?&pn=04208). Accessed 14 Sep. 2023.

Rakha, Hesham A. “Software.” *Hesham A. Rakha*,  
[https://sites.google.com/a/vt.edu/hrakha/software?authuser=0#h.p\\_PFphBs\\_aJ3l60](https://sites.google.com/a/vt.edu/hrakha/software?authuser=0#h.p_PFphBs_aJ3l60).



# Image Citations

<https://www.vtti.vt.edu/staffdir/bio.php?&pn=04208>

<https://sites.google.com/a/vt.edu/hrakha/home>