

**MICHIGAN STATE**  
**UNIVERSITY**

**Alpha Presentation**  
**Automated Retrieval of ADAS**  
**Driving Environments**  
**The Capstone Experience**

**Team Bosch**

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Fall 2020



*From Students...*  
*...to Professionals*

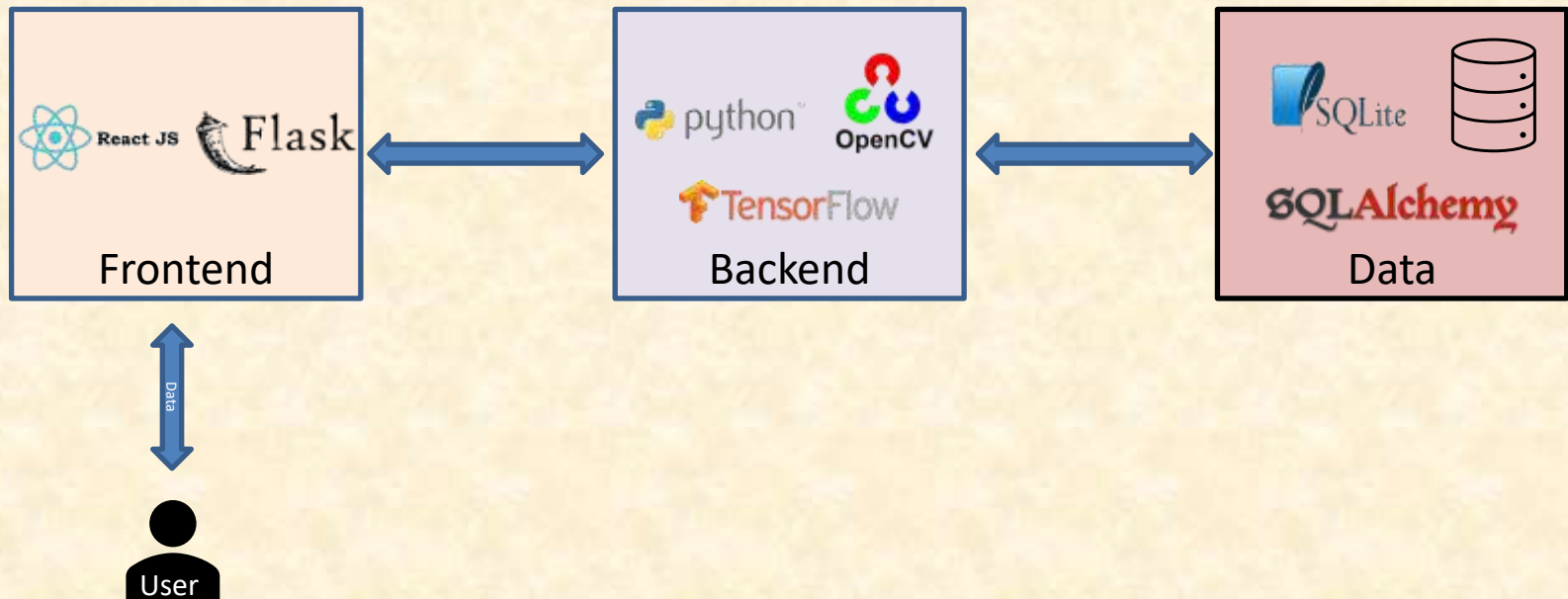
# Project Overview

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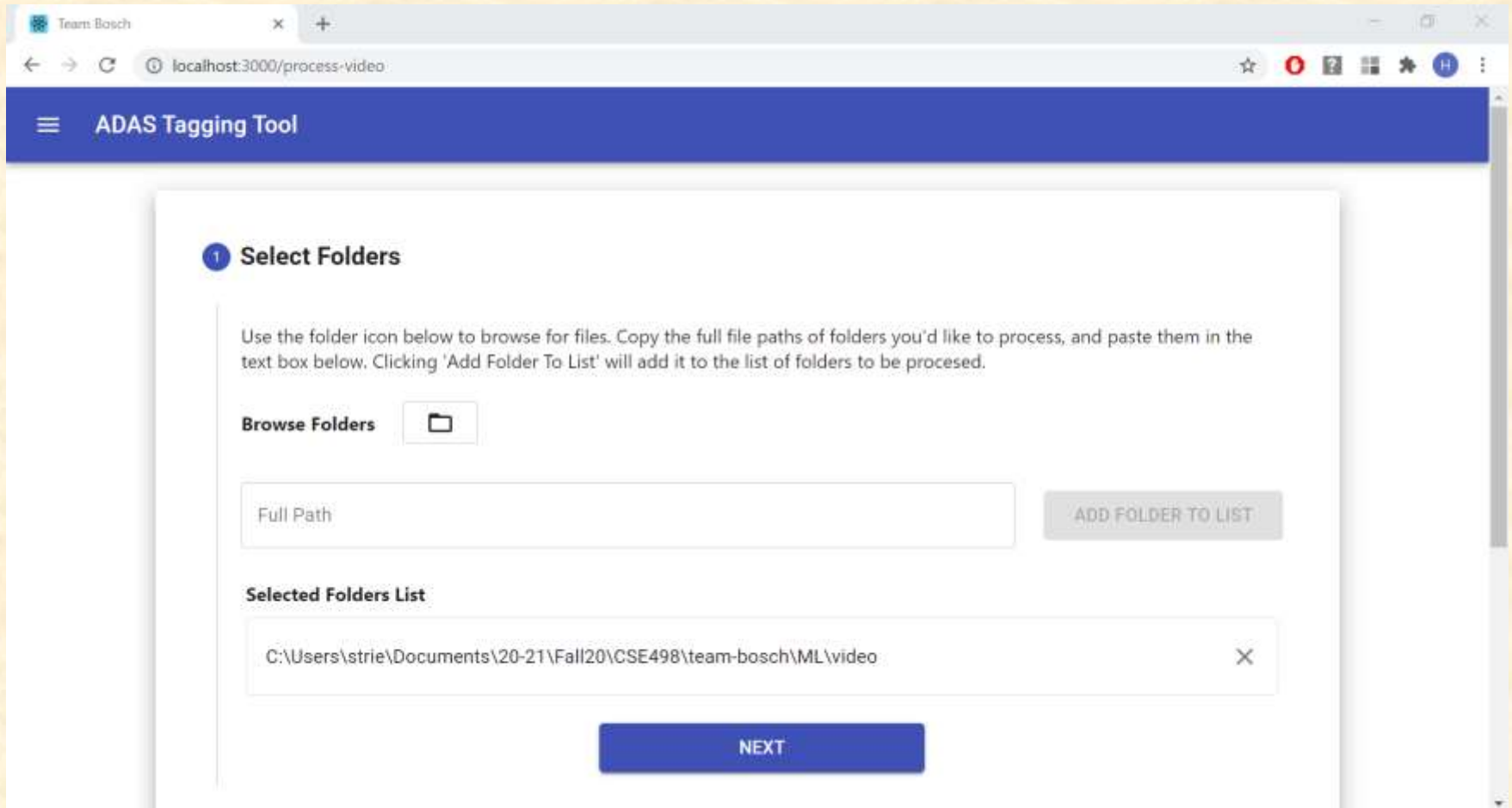
- The Problem:
  - Manually searching video for specific environments
  - Thousands of hours of footage
- The Solution:
  - automatically tag & categorize footage based on features/environments



# System Architecture



# Process Video Step 1

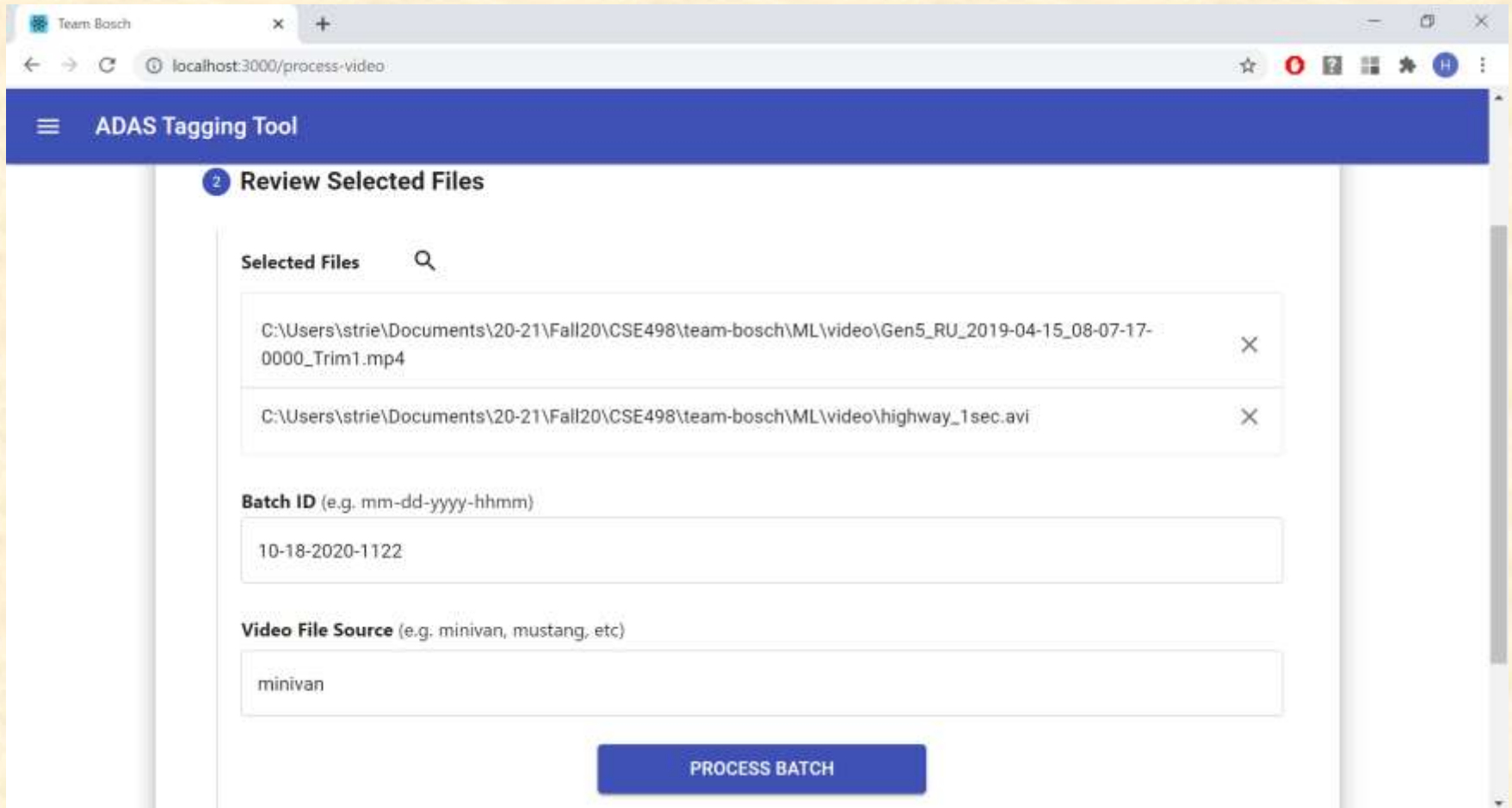


The screenshot shows a web browser window with the title 'Team Bosch' and the URL 'localhost:3000/process-video'. The page has a blue header with a hamburger menu icon and the text 'ADAS Tagging Tool'. The main content area is titled '1 Select Folders' and contains the following elements:

- Instructions:** 'Use the folder icon below to browse for files. Copy the full file paths of folders you'd like to process, and paste them in the text box below. Clicking 'Add Folder To List' will add it to the list of folders to be processed.'
- Browse Folders:** A label 'Browse Folders' next to a folder icon button.
- Full Path:** A text input field containing the path 'C:\Users\strie\Documents\20-21\Fall20\CSE498\team-bosch\ML\video'.
- ADD FOLDER TO LIST:** A grey button to the right of the text input field.
- Selected Folders List:** A list box containing the same path 'C:\Users\strie\Documents\20-21\Fall20\CSE498\team-bosch\ML\video' with a close 'X' icon on the right.
- NEXT:** A blue button at the bottom center of the form.



# Process Video Step 2



The screenshot shows a web browser window with the URL `localhost:3000/process-video`. The page title is "ADAS Tagging Tool". The main heading is "2 Review Selected Files". Below this, there is a "Selected Files" section with a search icon. Two files are listed in a table-like structure:

File Path	Action
<code>C:\Users\strie\Documents\20-21\Fall20\CSE498\team-bosch\ML\video\Gen5_RU_2019-04-15_08-07-17-0000_Trim1.mp4</code>	✕
<code>C:\Users\strie\Documents\20-21\Fall20\CSE498\team-bosch\ML\video\highway_1sec.avi</code>	✕

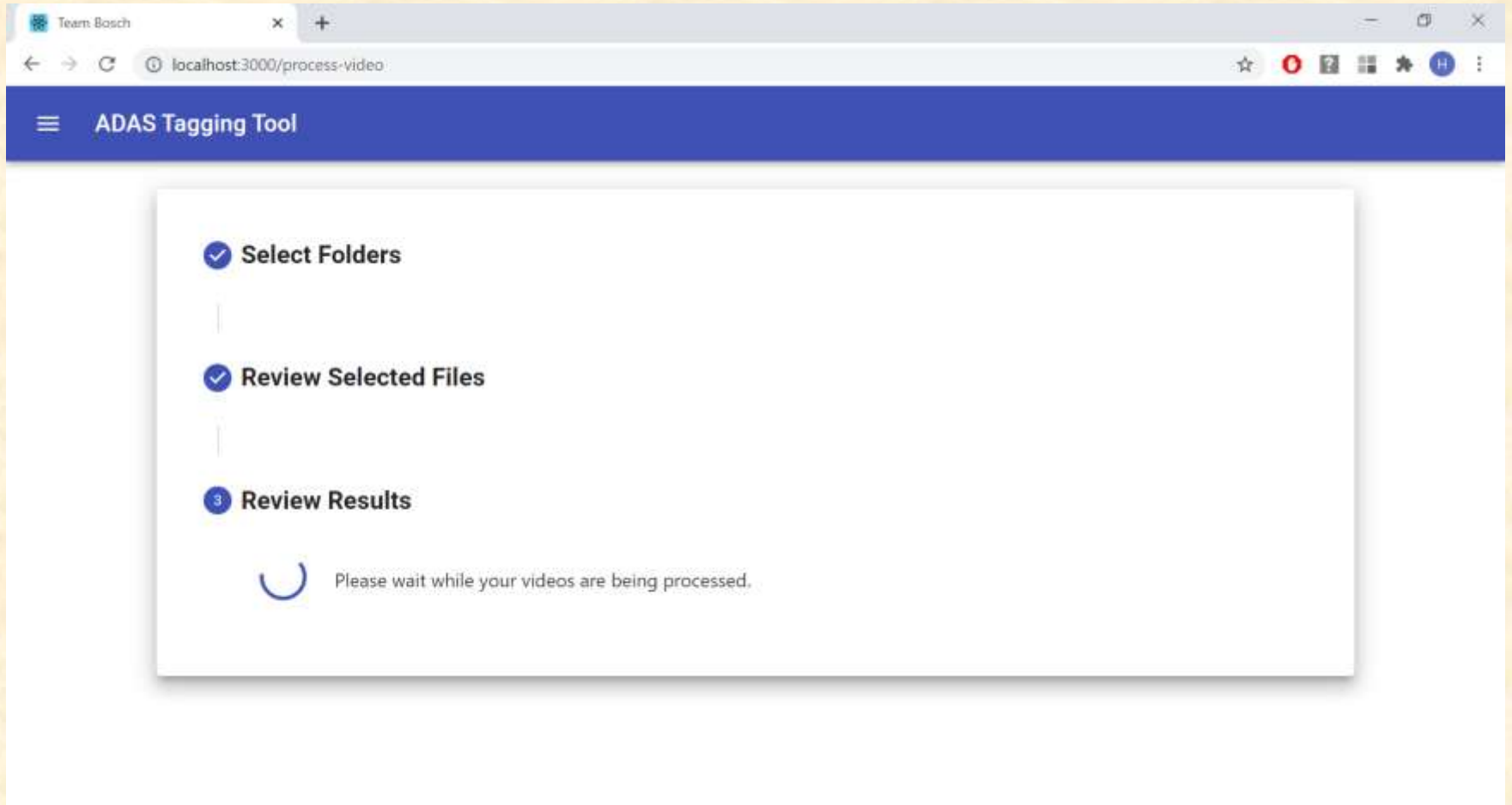
Below the file list, there are three input fields:

- Batch ID** (e.g. mm-dd-yyyy-hhmm): `10-18-2020-1122`
- Video File Source** (e.g. minivan, mustang, etc): `minivan`

A blue button labeled "PROCESS BATCH" is located at the bottom of the form.



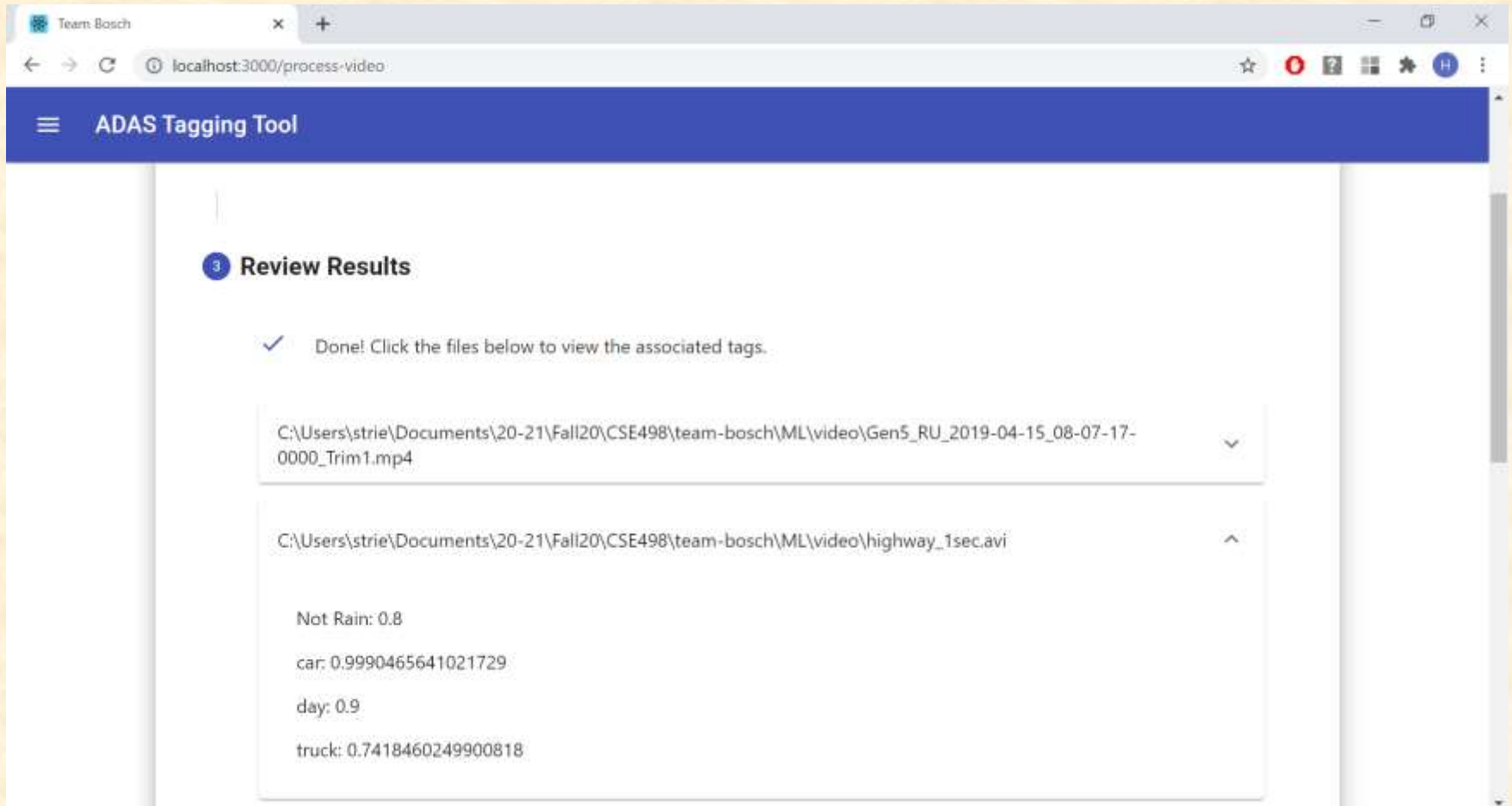
# Process Video Step 3



The screenshot shows a web browser window with the title "Team Bosch" and the address bar displaying "localhost:3000/process-video". The browser's address bar also shows navigation icons (back, forward, refresh) and utility icons (star, red circle, question mark, grid, star, blue circle with 'H', and a vertical ellipsis). The page content is titled "ADAS Tagging Tool" in a blue header bar. Below the header, a white box contains a progress list with three items: "Select Folders" (checked), "Review Selected Files" (checked), and "Review Results" (active, indicated by a blue circle with the number 3). Below the list, there is a blue circular progress indicator and the text "Please wait while your videos are being processed."



# Process Video Review Results



The screenshot shows a web browser window with the title "Team Bosch" and the address bar "localhost:3000/process-video". The page has a blue header with a hamburger menu icon and the text "ADAS Tagging Tool". The main content area features a section titled "3 Review Results" with a checkmark icon and the text "Done! Click the files below to view the associated tags." Below this, there are two expandable file entries. The first entry is "C:\Users\strie\Documents\20-21\Fall20\CSE498\team-bosch\ML\video\Gen5\_RU\_2019-04-15\_08-07-17-0000\_Trim1.mp4" with a downward arrow. The second entry is "C:\Users\strie\Documents\20-21\Fall20\CSE498\team-bosch\ML\video\highway\_1sec.avi" with an upward arrow. Below the second entry, there is a list of classification results: "Not Rain: 0.8", "car: 0.9990465641021729", "day: 0.9", and "truck: 0.7418460249900818".

**3 Review Results**

✓ Done! Click the files below to view the associated tags.

C:\Users\strie\Documents\20-21\Fall20\CSE498\team-bosch\ML\video\Gen5\_RU\_2019-04-15\_08-07-17-0000\_Trim1.mp4

C:\Users\strie\Documents\20-21\Fall20\CSE498\team-bosch\ML\video\highway\_1sec.avi

Not Rain: 0.8  
car: 0.9990465641021729  
day: 0.9  
truck: 0.7418460249900818



# Process Video Review Results


Team Bosch

localhost:3000/process-video

ADAS Tagging Tool

## Pending Review

C:\Users\strie\Documents\20-21\Fall20\CSE498\team-bosch\ML\video\highway\_Tsec.avi



Does the tag **'truck'** appear in this image? (confidence = 0.7418)

YES NO





# Search For Tags Step 1

The screenshot shows a web browser window with the URL `localhost:3000/search`. The page title is "ADAS Tagging Tool". The interface is divided into two main sections: "1 Select Filters" and "2 Select Tags".

**1 Select Filters**

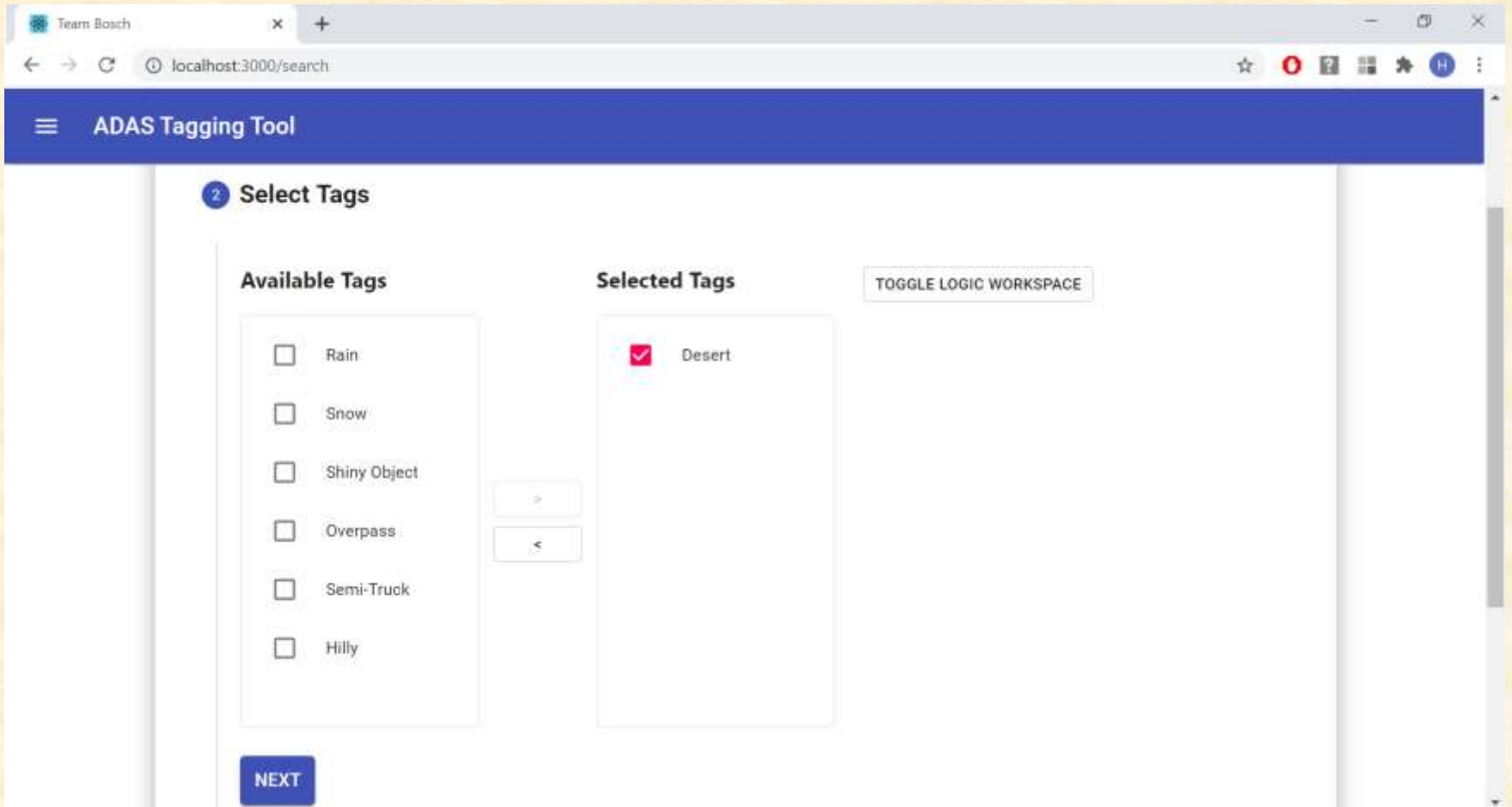
- Date Range:** Start Date: 09/01/2020, End Date: 10/18/2020.
- Video File Source:** select file source. Selected tags: mini van, mustang.
- Batch Id:** select file source. Selected tag: endurance-run-09-12-2020-0900.

A blue "NEXT" button is located below the filters.

**2 Select Tags**



# Search For Tags Step 2



The screenshot shows a web browser window with the title 'Team Bosch' and the URL 'localhost:3000/search'. The page features a blue header with a hamburger menu icon and the text 'ADAS Tagging Tool'. The main content area is titled '2 Select Tags' and is divided into two columns: 'Available Tags' and 'Selected Tags'. The 'Available Tags' column contains a list of tags with checkboxes: Rain, Snow, Shiny Object, Overpass, Semi-Truck, and Hilly. The 'Selected Tags' column contains a single tag, 'Desert', with a checked checkbox. Between the two columns are two buttons with right and left arrow symbols. To the right of the 'Selected Tags' column is a button labeled 'TOGGLE LOGIC WORKSPACE'. At the bottom left of the main content area is a blue button labeled 'NEXT'.

Team Bosch

localhost:3000/search

ADAS Tagging Tool

2 Select Tags

Available Tags

- Rain
- Snow
- Shiny Object
- Overpass
- Semi-Truck
- Hilly

Selected Tags

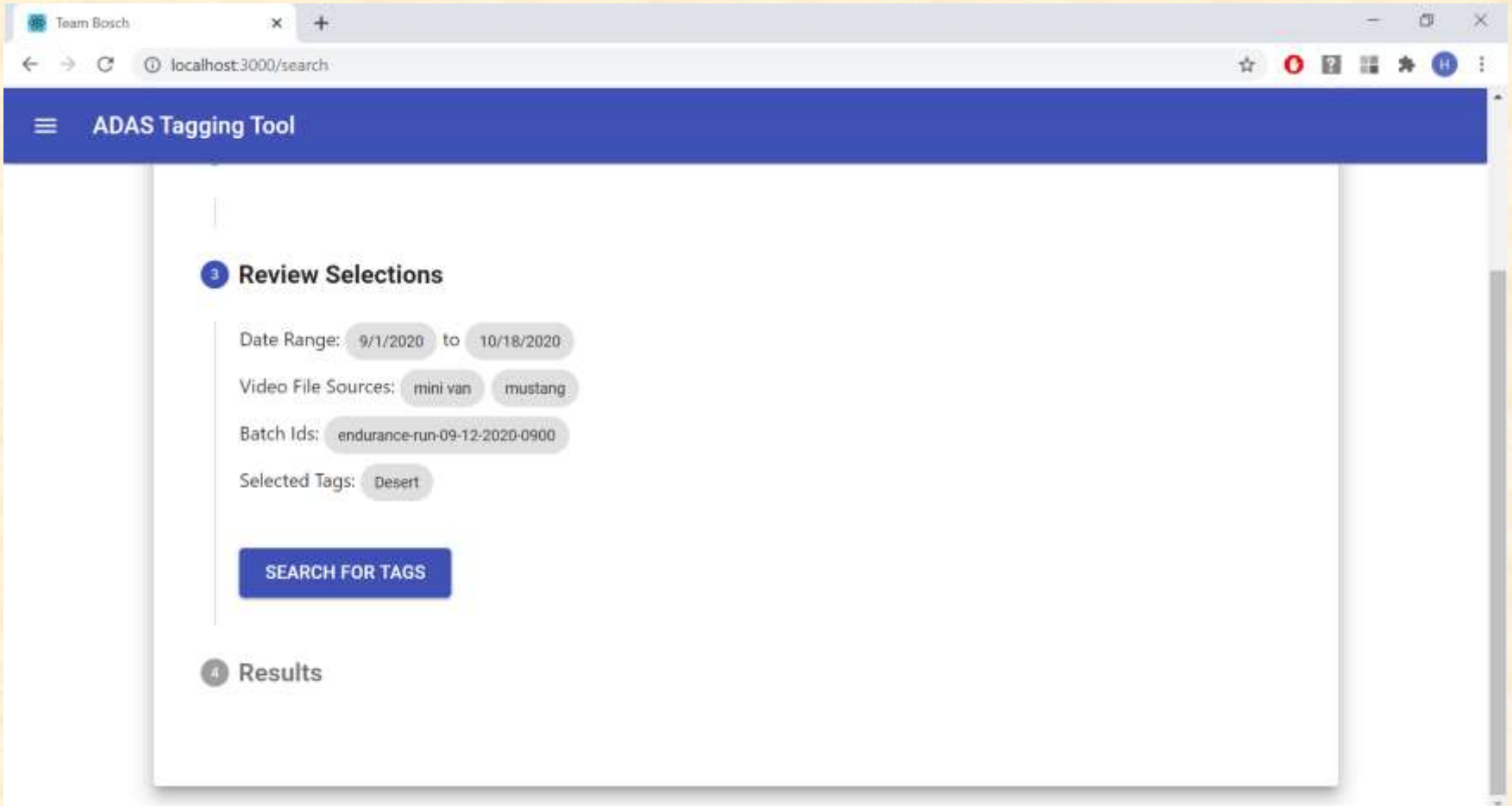
- Desert

TOGGLE LOGIC WORKSPACE

NEXT



# Search For Tags Step 3



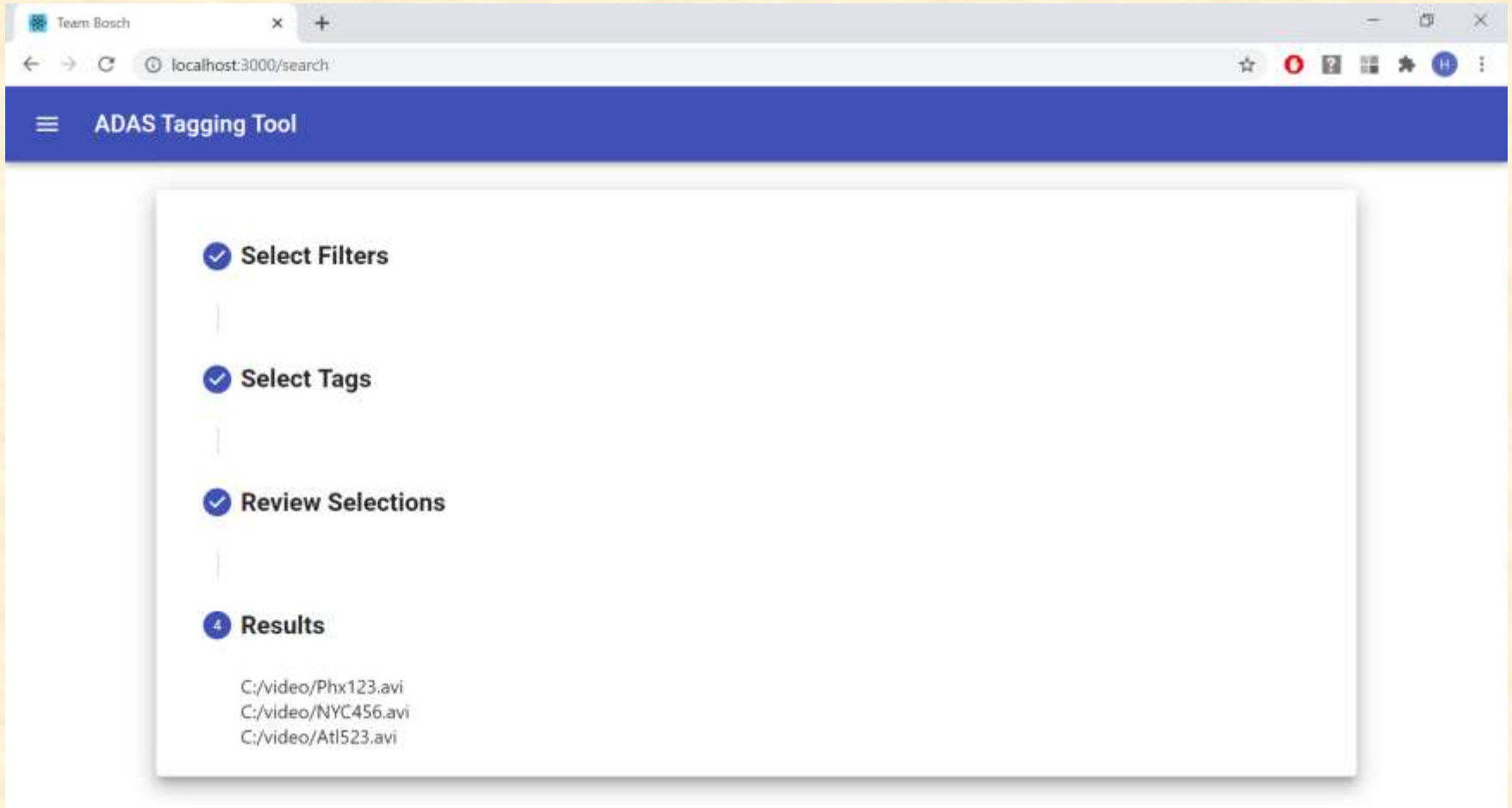
The screenshot shows a web browser window with the URL `localhost:3000/search`. The page title is "ADAS Tagging Tool". The main content area is titled "3 Review Selections" and contains the following filters:

- Date Range: 9/1/2020 to 10/18/2020
- Video File Sources: mini van, mustang
- Batch Ids: endurance-run-09-12-2020-0900
- Selected Tags: Desert

A blue button labeled "SEARCH FOR TAGS" is positioned below the filters. Below the button, the section "4 Results" is visible but empty.



# Search For Tags Step 4



The screenshot shows a web browser window with the title 'Team Bosch' and the address bar displaying 'localhost:3000/search'. The application header is 'ADAS Tagging Tool'. The main content area displays a progress indicator with four steps: 'Select Filters', 'Select Tags', 'Review Selections', and 'Results'. The 'Results' step is currently active, indicated by a blue circle with the number '4'. Below the 'Results' step, three video file paths are listed: 'C:/video/Phx123.avi', 'C:/video/NYC456.avi', and 'C:/video/Atl523.avi'.

Team Bosch

localhost:3000/search

ADAS Tagging Tool

- ✓ Select Filters
- ✓ Select Tags
- ✓ Review Selections
- 4 Results
  - C:/video/Phx123.avi
  - C:/video/NYC456.avi
  - C:/video/Atl523.avi



# What's left to do?

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- Train new objects(bridge/tunnel)
- Logic workspace
- Progress bar for videos
- Apply filters to DB query
- General UI improvements



# Questions?

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