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Autoscope Intersection Volume Reader

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INTRODUCTION

This program was developed by the Advanced Traffic Analysis Center (ATAC) to store, process, and analyze volume data from Autoscope traffic cameras. Prior to using this tool, users must have Detector Volume Reports generated by Autoscope software having a .TXT extension. This tool was written in JAVA; therefore, a Java runtime environment must be installed on the computer.

The purpose of this software is to process Autoscope volume data and display the information in an organized manner for traffic operation and transportation planning analyses. A template was designed in Microsoft Excel to be used with Autoscope Solo Pro software (Network Brower). The template which was developed provides a summary sheet with daily averages in 15-minute intervals for the following information:

- Approach turning movement volumes
- Hourly intersection totals
- Intersection daily total

DEVELOPING AUTOSCOPE VOLUME DATA

Having the proper setup with the Autoscope detector files is vital to the functionality of the Volume reader. Without using the proper setup as follows, the reader will provide either inaccurate or no results at all.

Autoscope Setup

A few procedures must be performed within Autoscope regarding the detector and polling configuration. The following sections describe these requirements in more detail. It is assumed that the user has basic knowledge of correctly installing and setting up Autoscope detectors. Substandard detector placement and setup can adversely affect the volume accuracy.

Detector Configuration and Naming

To use the template, the following procedures must be performed during the detector setup:

- 1. Open the Autoscope Detector Editor for the desired Autoscope MVP.
- 2. Insert a *speed detector* in the desired lane by selecting the **(**) icon.
- 3. Insert a *station detector* with the **#** icon.
 - a. Right click on the detector and select Add/Remove Members.
 - b. Attach the speed detector (not the count detector) to the station detector.
 - c. After completing the previous steps the detector setup should look similar to Figure 1 when the detector station is selected.

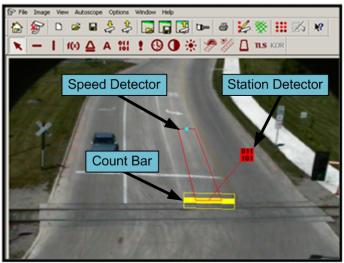


Figure 1. Autscope Detection Setup

- d. Configure the parameters of the station detector by double clicking on the station detector (Figure 2).
- e. Since the template extracts data from the Autoscope output files, care must be used when naming the detection stations. The following naming strategy is recommended.
 - The detector title should include the direction, lane number and the turning movement, e.g., NB_1_T. (Note: The maximum number of detectors is eight per approach).
 - Turning movement must be last and only use the first letter of the movement, i.e., L, T, and R. This is how the template organizes the Autoscope data. Inaccurate output will be produced if this naming convention is not followed.
 - Other naming patterns may be applied as long as the turning movement is the last character and each detector name is unique.

Detector Station	×
Detector 123	1
Detector Title: NB_1_T	I
Per Cycle Parameters	
Controller Phase / Load Switch: None	
Maximum cycle: 15 📺 min.	
Level of Service	
C Speed	
Flow/Capacity	

Figure 2. Station Detector Setup

- f. Continue this process for each individual lane for which volume counts will be conducted.
- 4. Once the speed and station detectors have been setup upload the detector file to the Autoscope MVP.

Data Collection: Polling Setup

To collect the volume data, a polling configuration will have to be setup. The configuration specifies the type of data and time intervals for data collection.

- 1. With the Autoscope Network Browser open, select the appropriate Autoscope MVPs.
- 2. Select *Data Collector* under the *Data* pull-down menu.
 - A dialog box will appear allowing you to download any data that is currently on the MVP before continuing setup for the new configuration. You may close this dialog box or download the data. (Keep in mind when setting up a new polling configuration previous polling data will be erased.)
- 3. Select *New* under the *File* pull-down menu. Use the same Autoscope MVPs if a dialog box asks. The polling dialog box will appear as shown in Figure 3.
 - a. In the Add Poll dialog box configure the following:
 - i. Select the Autoscope MVPs which are to be used by holding the Ctrl key and clicking on the Autoscope descriptions.
 - ii. Select the following parameters:
 - 1. Detector Type Detector Stations
 - 2. Fields Volume
 - 3. Interval Type Data Interval
 - 4. Data Interval 15 minutes
 - b. Click Add Poll
 - c. Close the dialog box

12th Ave North @ 18th 9 12th Ave North @ 18th 9	it WB Phase 6 1 - it NB Phase 4 4	040503FFA0695416 Mini-Hub II - 040502FFDD7E5E16 Mini-Hub I	ImitHub II -8.3.0. -2006, 4,14 -15:31:39 -0. -0. -0. -8.3.0. -2006, 4,14 -15:31:39 -0. -0. Solo Pro -0. -solo Pro -solo Pro -8.3.0. -2006, 4,14 -15:31:39 -0. -0. -solo Pro -0.
Detector <u>Types</u> : Detector Stations	Detectors:	Eields:	Interval Type:
Count Detectors Presence Detectors		Volume Arithmetic Mean Speed	Data Interval
Speed Detectors Label Detectors		Vehicle Class Count Average Time Headway	15 Minutes
Detector Functions		Average Time Occupanc Level Of Service	Betrieval Interval:
		Space Mean Speed Space Occupancy	15 Minutes Poll List Type
		Density	Persistent (Flash Data)
Custom Filter	1		
Add			Add Poll
Delete		larm when the detector turns on	
	urenerate an a	larm when the detector turns off	
			Close

Figure 3. Polling Configuration

4. Check that *Persistent* is selected under the *Polling* pull-down menu. This will enable the MVPs to collect data without being connected to the computer.

- 5. Select the *View* pull-down menu followed by *Options*.
 - a. Under the Display tab select the following: *Detector Title, Date, Time and Volume* (Figure 4).
 - b. Select the Data tab (Figure 5).
 - i. Enable the automatic save option.
 - ii. Select the desired base storage folder for storing the data.

Options	×	Options	×
Display Polling Logging Data Data View Automatically choose the appropriate columns to display CPU Identifier Autoscope Description Detector ID Detector Title Date Time Duration Status Data Interval Ticks (millisec.) State Speed Length Class Average Flow Rate Volume Arithmetic Mean Speed Class A Count Class B Count		Display Polling Logging Data Storage ✓ Automatically save data to disk! ✓ Limit the size of output files to this many lines: 65535 Base storage folder: C: Wy Autoscope\Polling Data How would you like to pame data folders? Direction/Phase and CPU Identifier ✓ Alarn Data Log the alarm when it turns on Log the alarm when it turns on ✓ Alarn Data Log the alarm when an alarm turns on: ✓ ✓ Play this sound when an alarm turns of: Chimes wav Stop playback after 5 seconds	
OK Cancel Apply	Help	OK Cancel Apply Help	

Figure 4. Display Options

Figure 5. Data Options

- 6. Click OK to apply the changes.
- 7. Select the icon to start polling data.

Note: It is allowable to select any of the boxes in the Display Options window between 'Data Interval' and 'Volume'. However, for the Autoscope Intersection Volume Reader to correctly read the volume data, the first 9 options along with the 'Volume' option MUST be checked.

Data Collection: Downloading Data

After polling data for the desired amount of time, the data can be downloaded for reviewing and processing. Be aware of the length of time the MVP's memory will last. Once the memory has been filled, the MVP will overwrite the oldest data in the list. (The time length is dependent on the amount of detectors which are being polled.)

From the Autoscope network browser:

- 1. Highlight Autoscope MVPs for the intended intersection.
- 2. Select Data followed by Data collector.
- 3. Select a Time Stamp or download all the Persistent Poll Data from the dialog box.
 - (Keep in mind when selecting times that interval <u>end times</u> are used in Autoscope.)

• After the download is complete it will be displayed in the Data Collector window. The data is also saved in the selected base storage folder.

PROCESSING/STORING AUTOSCOPE DATA

Once the Autoscope data is downloaded, it can be processed and stored using the Autoscope Intersection Volume Reader. Using this program, Autoscope data is stored into Microsoft Access Databases. Typically each intersection would have its own database, with the ability to periodically update and add new traffic counts. The time it takes for the reader to place the counts in the database is dependent on the size of the .txt file. Multiple Volume Reader applications can operate at the same time; however, the time for completion will be increased in accordance of how many applications are being used.

- 1. Open the "Autoscope Volume Reader.JAR" file (Figure 6).
 - From the main screen (Figure 6), users can initially select "Import .TXT file" or "Select .MDB file". The "Select .MDB File" can be used if the data has previously been loaded into the intersection database (see Step #12).

🛔 Autosc	ope Intersection Volume R	leader			
	Approach1	Appr	oach2	Approach3	Approach4
	Name: Name		Select .MDB File	Name:	Name:
	Import .TXT File Select .MDB File Import .TXT File Number of Detectors: - Number of De			Import .TXT File Select .MDB File Number of Detectors: -	Import .TXT File Select .MDB File Number of Detectors: -
Approach	TXT File	MDB File			
1	Not Selected	Not Selected			
2	Not Selected	Not Selected			
3	Not Selected	Not Selected			
4	Not Selected	Not Selected			
Time Period Start Date: End Date:	d to Analyze	Day to Analyze Weekdays Weekends All Select Day(s)	Select Day(s) Sunday Monday Uuesday Wednesday Thursday Friday Saturday	Submit Help/Ir	

Figure 6. Initial Autoscope Intersection Volume Reader screen.

- 1. Type in the direction or name of the approach in the "Name" field under "Approach1"
- 2. Select the "Import .TXT File" button.
- 3. Browse to the appropriate .TXT file containing a Detector Volume Report created by the Autoscope software.
- 4. Enter a database name (.MDB file), which should correspond to the intersection name and approach direction, and select Save.
 - The program will read the relevant data from the .TXT file and write the relevant data into the .MDB file. This process can take several minutes and is dependent upon how much data is stored in the .TXT file.

Note: The reading, checking, parsing, and writing the Autoscope data is very computational intensive. Although a status display is not available, the program is processing the data (check the directory where the database file is stored to see the file size grow). Processing time as high as 30 minutes has been experienced when converting a 13 MB Autoscope output file (113 days of data with 6 detector stations equating to 65,496 rows of data).

- 5. Repeat Steps 2-5 for each approach in the intersection.
 - See Figure 7 with completed approach configuration

🛔 Autosco	ope Intersection Volume	Reader			
	Approach1 Approach2			Approach3	Approach4
Na	Name: EB Name: WB			Name: NB	Name: SB
Impo	rt .TXT File Select .MDB	File Import .TXT	File Select .MDB File	Import .TXT File Select .MDB File	Import .TXT File Select .MDB File
	Number of Detectors: -	Num	ber of Detectors: -	Number of Detectors: -	Number of Detectors: -
Approach	TXT File	MDB File)		
1	Not Selected	X:\Project:	Traffic Operations\ILD Comparison	A	
2	Not Selected		Traffic Operations\ILD Comparison		
3	Not Selected		Traffic Operations\ILD Comparison		
4	Not Selected	X:\Project:	s\Traffic Operations\ILD Comparison	<u>A</u>	
Time Period	to Analyze	Day to Analyze	Select Day(s)	Submit Help/In	nformation
Start Date:		🔘 Weekdays	Sunday		
End Date:		O Weekends	Monday		
		⊖ All	Tuesday		
		 Select Day(s) 	Wednesday		
		0	Thursday		
					ALA
			Friday		ADVANCED TRAFFIC ANALYSIS CENTER
			Saturday		

Figure 7. Reader screen after approach configuration.

Analysis Duration/Days

- 6. Based on the data collection dates contained in the .TXT file, select the appropriate Start Date and End Date by selecting the calendar button (Figure 8).
 - If the start and end dates are the same, only data for the specific day will be analyzed.
- 7. Select the appropriate day(s) of the week to analyze.
 - Users can analyze Weekdays, Weekends, All, or Select Day(s).
 - If Select Day(s) is active, any combination of the days of the week may be selected for analysis.

🛔 Autosco	pe Intersection Volume R	Reader			
	Approach1 me: EB	Approach2	Name	Approach3	Approach4 Name: 58
Impor	rt .TXT File Select .MDB F	ile Import .TXT File S Number of Detect		TXT File Select .MDB File Number of Detectors: -	Import .TXT File Select .MDB File Number of Detectors: -
Approach	TXT File	MDB File			
1	Not Selected		rations\ILD Comparison\A		
2	Not Selected		rations\ILD Comparison\A		
3	Not Selected		rations\ILD Comparison\A		
4	Not Selected	X:\Projects\Traffic Oper	rations\ILD Comparison\A		
Time Period	to Analyze	Day to Analyze	Select Day(s)	Submit Help/Inform	ation
Start Date:	09/01/2007	🔘 Weekdays	Sunday	- Sabine - Hopfinion	
End Date:	09/30/2007 🛅	O Weekends	🔲 Monday		
September 🗸	2007 🗘	O All	🔽 Tuesday		
Sun Mon	Tue Wed Thu Fri Sat	 Select Day(s) 	Vednesday		
85	1	0			
36 2 3	4 5 6 7 8		V Thursday		
87 9 10	11 12 13 14 15		Friday		ADVANCED TRAFFIC ANALYSIS CENTER
88 16 17	18 19 20 21 22		Saturday		
39 23 24	25 26 27 28 29				

Figure 8. Analysis duration and days of the week.

Processing Volume Data

- 8. Select the "Submit" button to process the detector volume data.
 - Once this is performed, a "Results" window will be generated showing the traffic volume data (Figure 9).
 - The 1st column shows the start time of the row of data.
 - The preceding column headings show the intersection turning movements based on the user input (labeled the same order as approaches specified earlier, as well as by movement Left, Thru, and Right. Total columns are illustrated for each approach, as well as the total intersection.
 - If an approach or movement is not used, it is simply not displayed.
 - If more than one day of data were selected, the cell values represent the average for that time interval and the selected day(s) of the week.
 - If communication were lost to the controller causing gaps in the recorded data, the averages would be based on the available data.

File																		
have T	EB			WB NB							9	5B		Int Tota				
Start T	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total		4
0:00 AM	13	20	2	34	1	14	3	18	3	1	1	5	2	2	8	12	69	1
0:15 AM	11	15	1	27	1	12	1	14	2	1	2	4	0	2	6	8	53	
0:30 AM	9	17	1	28	0	11	3	14	0	2	1	3	1	2	4	7	52	1
0:45 AM	8	8	2	18	1	12	1	13	1	1	0	2	0	0	5	5	38	1
1:00 AM	5	8	1	15	0	11	1	12	1	1	1	3	1	1	3	5	35	
1:15 AM	4	8	1	13	0	7	1	8	1	1	1	2	0	1	2	3	26	
1:30 AM	5	7	1	12	0	7	1	8	2	0	0	2	0	1	2	4	26	
1:45 AM	3	7	0	10	0	7	2	9	1	0	1	3	0	1	2	3	25	
2:00 AM	5	10	1	15	0	5	1	6	0	0	0	0	0	0	3	3	24	1
2:15 AM	3	7	0	9	0	4	1	6	1	0	0	1	0	1	4	5	21	1
2:30 AM	3	8	0	12	0	3	1	5	1	0	0	1	0	1	0	1	19	1
2:45 AM	2	8	0	10	0	2	0	2	1	0	0	1	0	0	1	2	15	
3:00 AM	4	4	0	8	0	5	0	5	3	1	0	4	0	2	2	4	21	
3:15 AM	2	3	0	6	0	3	2	5	1	1	0	2	0	1	2	2	15	
3:30 AM	2	4	0	6	0	4	0	4	1	1	0	2	0	1	1	2	14	-
3:45 AM	3	2	0	5	0	2	0	2	1	0	0	1	0	0	2	2	10	-
4:00 AM	3	4	0	7	0	4	0	4	1	0	0	1	0	1	1	2	14	-
4:15 AM	2	3	0	5	0	7	0	8	1	2	0	3	0	2	2	3	19	
4:30 AM	3	6	0	9	0	10	0	10	2	2	0	4	0	1	2	3	26	-
4:45 AM	7	4	0	11	1	8	1	10	1	3	0	4	0	1	2	3	28	-
5:00 AM	8	8	0	16	1	9	1	11	4	2	0	6	0	2	2	4	37	
5:15 AM	15	8	0	23	1	26	3	30	2	3	0	6	1	3	7	11	70	-
5:30 AM	19	10	0	29	0	45	4	49	4	4	0	8	0	5	20	26	112	-
5:45 AM	18	10	0	29	1	29	3	32	2	3	0	6	0	2	13	16	83	-
6:00 AM	23	18	1	43	0	49	1	51	9	8	1	18	0	5	9	14	126	-
6:15 AM	34	26	1	61	0	44	4	48	6	6	0	10	0	1	14	15	136	-
6:30 AM	40	20	1	70	0	58	6	64	2	3	0	5	1	1	17	19	158	-
6:45 AM	61	41	2	103	1	66	5	72	6	9	1	16	1	5	21	27	218	-
7:00 AM	51	51	1	103	0	60	4	64	8	4	0	10	0	3	21	27	204	-
7:00 AM	76	78	3	103	1	69	10	80	6	7	1	12	4	3	21	36	286	-
7:15 AM 7:30 AM			9	304	1	86	10	105	9	18	5	32	8	10	40	58	499	-
	127	168	1200						0100	1411 CC / 1	221013	1222002			1000	10000100		-
7:45 AM	133	184	6	322	1	84	20	105	12	23	2	37	5	9	40	53	517	_
8:00 AM	93	88	4	185	2	50	13	66	8	8	2	17	5	6	34	44	312	_
8:15 AM	83	92	3	179	1	63	17	82	5	14	1	20	2	5	22	29	310	_
8:30 AM	97	126	5	228	1	75	17	93	10	12	2	24	5	5	30	40	385	_
8:45 AM	82	123	5	209	2	66	14	81	9	15	2	26	6	6	33	45	361	_
9:00 AM	75	146	6	227	2	56	14	72	8	10	2	19	7	6	27	41	359	_
9:15 AM	69	118	6	193	2	61	18	81	10	12	5	26	5	5	33	44	344	_
9:30 AM	70	95	6	171	0	55	15	71	6	4	6	16	6	5	32	43	301	_
9:45 AM	53	76	4	133	1	70	9	79	6	5	2	13	5	6	39	50	275	
0:00 AM	37	49	4	90	1	46	12	59	8	3	1	12	5	9	28	42	203	

Figure 9. Processed data in Result Window.

9. Print the displayed information using the File menu pull-down. Once "Print" is selected, a dialog box (Figure 10) will be displayed for entering the intersection name. Next, select the desired printer for printing the results.

👉 Enter	
Intersection Name:	
Approach File Info:	
	Ok Cancel

Figure 10. Intersection Name dialog box

- 10. To graph or perform statistical analyses with the data, select (left mouse click) the 0:00 AM interval. While holding down the left mouse button, drag the mouse cursor to the bottom right interval so all of the data are highlighted. Using the keyboard press and hold the "Ctrl" key while selecting the letter "c". This will copy the data to the computer's memory. Open Excel (or equivalent) and paste the data (press and hold the "Ctrl" key while selecting the letter "v").
 - The user can select portions or all of the data to copy and paste into a spreadsheet program.

DATABASE INFORMATION

- If users have previously imported a .TXT file and wish to perform additional analyses with the data, select "Select .MDB file".
- Browse to the appropriate .MDB file that was previously created by the Autoscope Intersection Volume Reader program.

NOTE: The database (.MDB) file should correlate to the intersection name. Additional volume information from the .TXT files is added to the current .MDB file. Only new volume data (based on the Date/Time field) will be added to the .MDB file and overlapping data will be disregarded.

SYSTEM REQUIREMENTS

- Autoscope Network Browser
- J2SE (Java 2, Standard Edition) Runtime Environment can be downloaded free of charge from http://java.sun.com.

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