

2	0
2	4

EMERSON
LABVIEW
CONFERENCES

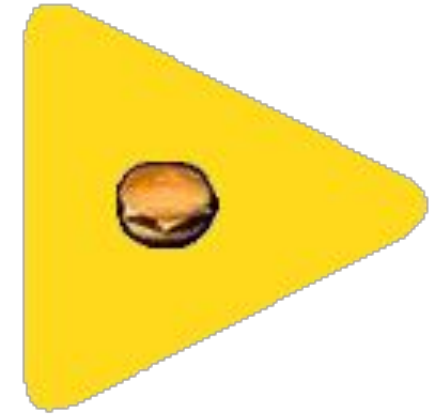
Summer of LabVIEW 2024

LabVIEW Challenges for Fun and Training

Presented by DNatt & DBomm

About DNatt

- 25+ years at NI
 - 3 years in AE (TSE)
 - 18+ years in LabVIEW R&D
 - 4 years in TSE (again)
- 7-time Undefeated World's Fastest LabVIEW Programmer
- Quick Drop!
- Presentation library: <https://www.dnatt.org>



About DBomm

- Needs a haircut
- Jumps out of planes
 - Usually with a parachute
- Star of at least one Kishi Bashi music video
- Misses all his NI TSE pals immensely
- Loves working with PPLs
- Mercilessly mows down colleagues in hallways with his one wheel
- Thinks rockets are kinda cool
- Would rather be at Cidercade right now
- Created his own Channel Wire type called the “Bommanator”
- Enjoys being inches away from certain death (i.e. rides a motorcycle)
- Has released 4 vipm.io packages since you started reading this slide
- Loves presentation slides full of text (But only wrote this bullet on this slide!)



Summer of LabVIEW

Goal: Grow LabVIEW programming prowess and excitement

- Creating LabVIEW challenges that are:
 - approachable to beginners
 - interesting to experts
- Learning useful LabVIEW programming topics like:
 - algorithms
 - data structures
 - frameworks
- Providing year-round fun for:
 - user groups
 - internal competitions
 - practice!



LabVIEW developer figuring out where to gain skills.

History - Summer of LabVIEW 2022



- Limited to NI Sales & Support organization
- CASH PRIZES for 1st/2nd/3rd place
 - Additional cash prizes for “special” awards
- June - Wordle
- July - Maze
- August - SquareBattle
- Internal NI webpage for contest submissions
 - Written with the G Web Development Module with the server written in LabVIEW



Wordle

Description

Given an unknown 5-letter word, your LabVIEW code must guess the word in as few tries as possible given information about which letters in each guess are in the target word. The goal is to pass hundreds of random 5-letter words through your code and have the **smallest average number of guesses**.

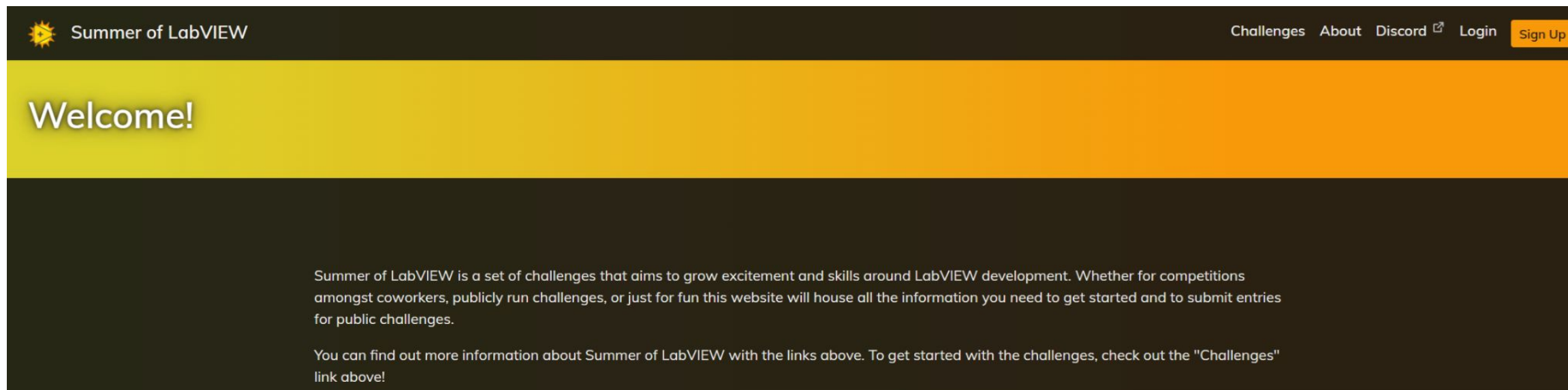
You can only have one entry waiting to be scored for each challenge. If you have a submission listed below that is not scored yet, it will be skipped for scoring when you upload a new submission for this challenge.

Your Submissions

ID	Submitted	Run	Score	Info
5	2022-05-30T16:41:05.387Z			Not run yet.

History - Summer of LabVIEW 2023

- Open to the worldwide LabVIEW community
- Official badges for prizes
- SquareBattle Reprised
- Redesigned external page for contest submissions
 - www.summeroflabview.com



- Winners announced and demonstrated at GDevCon NA 2023

Summer of LabVIEW 2024

- Open to the worldwide LabVIEW community
- All new public challenges to participate in. Plural!
- Will be running 4 challenges varying from 3 to 4 weeks each
- Submission page is still www.summeroflabview.com

Word Search

May 26 - June 22

Inputs

Letter grid (2D string array)

Word list (1D string array)

Output

Word/Index pairs (map)

DEMO

The screenshot displays a word search application interface. On the left, the 'Word Search Grid' is a 6x7 grid of letters: R B L U E W, E G N A R O, D B C E W L, L L D K V L, P U R P L E, N E E R G Y. Below it is a 'Word List' containing: YELLOW, ORANGE, PURPLE, BLUE, GREEN, RED. On the right, the 'Solutions' section shows three found words: BLUE, GREEN, and ORANGE. Each word is associated with a 'Letter Indices' table. The 'Size' is 6. Each word has a count of 0.

Row	Column	Row	Column	Row	Column	Row	Column	Row	Column	Row	Column
0	1	0	2	0	3	0	4	0	0	0	0

Row	Column	Row	Column	Row	Column	Row	Column	Row	Column	Row	Column
5	4	5	3	5	2	5	1	5	0	0	0

Row	Column	Row	Column	Row	Column	Row	Column	Row	Column	Row	Column
1	5	1	4	1	3	1	2	1	1	0	0

Word Search Introduction Video



https://www.youtube.com/watch?v=GZb_ybhlg70

Word Search Details

Download NOW at:

<https://bit.ly/solwordsearch>

- GOALS
 - Primary Goal - Write a solver that works!
 - Secondary Goal - Write a solver that is *fast*.
- PARAMETERS
 - Multiple **large** word searches
 - **Lowest** average solve time across all puzzles
 - Solve time of ∞ for incorrect solutions
- LEARNING AREAS
 - Maps
 - <https://bit.ly/dnattcollections>

Wordle

June 23 - July 13

Write a solver for The New York Times' **Wordle** game.



Inputs

Results of previous guess

Output

Next guess

Previous Guess Result	New Guess
-+++	crazy

DEMO

Solver VI

C:\temp\Wordle Engine\Solvers\DNatt Simple Solver.vi

Word to Test

barge

Results

```
Run 001 - Target word = barge, solved in 08 Guesses
Guess 01: crane - Result: -**--+
Guess 02: marse - Result: -+++
Guess 03: parle - Result: -+++
Guess 04: barde - Result: +++-+
Guess 05: barye - Result: +++-+
Guess 06: barbe - Result: +++-+
Guess 07: barre - Result: +++-+
Guess 08: barge - Result: +++++
```

Wordle Details

- GOALS
 - Primary Goal - Write a solver that works!
 - Secondary Goal - Write a solver that *takes the fewest guesses*.
- PARAMETERS
 - Multiple words
 - **Lowest** average guess count across all words
 - Guess count of ∞ for incorrect solutions
- LEARNING AREAS
 - DQMH
 - <https://bit.ly/dnattdqmhintro>
 - Sets
 - <https://bit.ly/dnattcollections>

Reversi

July 14 - August 3

Created by Quentin Alldredge

Every turn you're provided a grid of available moves and the board layout. Choose the best move to fill the board with your color.

Enclose opponent's discs between two discs of your color to change their discs to your color.

Choose which implementations to face against each other or run a round-robin of all available implementations.

Control the play speed to carefully watch moves or run through an entire game very quickly.

The image shows a LabVIEW interface for a Reversi game. The top window, titled "Reversi", displays the game state with an 8x8 board and a "Current Turn" indicator. It includes a "Game Mode" dropdown set to "Challenge Matches (All Players)", "Games Per Match" set to 1, and a "Wait per Turn (ms)" slider. A "Running Stats" table shows scores for "Generic Player" (7 Black, 11 White) and "Human" (1 Black, 1 White). A "Win Count" table shows 1 game played and 0 wins for the Generic Player, and 1 game played and 1 win for the Human. The bottom window, titled "NonOOPlayer.lvlib:ReversiPlayer.vi Block Diagram", shows the logic for the player. It includes a "Board" input, "Possible Moves" (a Boolean array), and "Player Color" (a dropdown). A "#TODO" comment indicates where to implement AI logic. A "Choice Coordinates" control is used to select a move. The right side of the image shows a "Board Layout" grid with rows and columns labeled 0-7.

Black Player	White Player	Black Score	White Score	Winner
Generic Player	Diagon Alley	7	11	

Player	Games Played	Win Count
Generic Player	1	0
Human	1	1

Board Layout

Columns	0	1	2	3	4	5	6	7
Rows	0							
1								
2								
3								
4								
5								
6								
7								

DEMO

Formula G

August 4 - August 31

The challenge ships with working logic that can only reach a moderate speed, develop smarter handling and see if you can beat it!

Your VI is given the car position/speed and 10 distance measurements around the car.

This challenge is “real-time” (25Hz) so it’s helpful to not take a lot of processing time!



DEMO

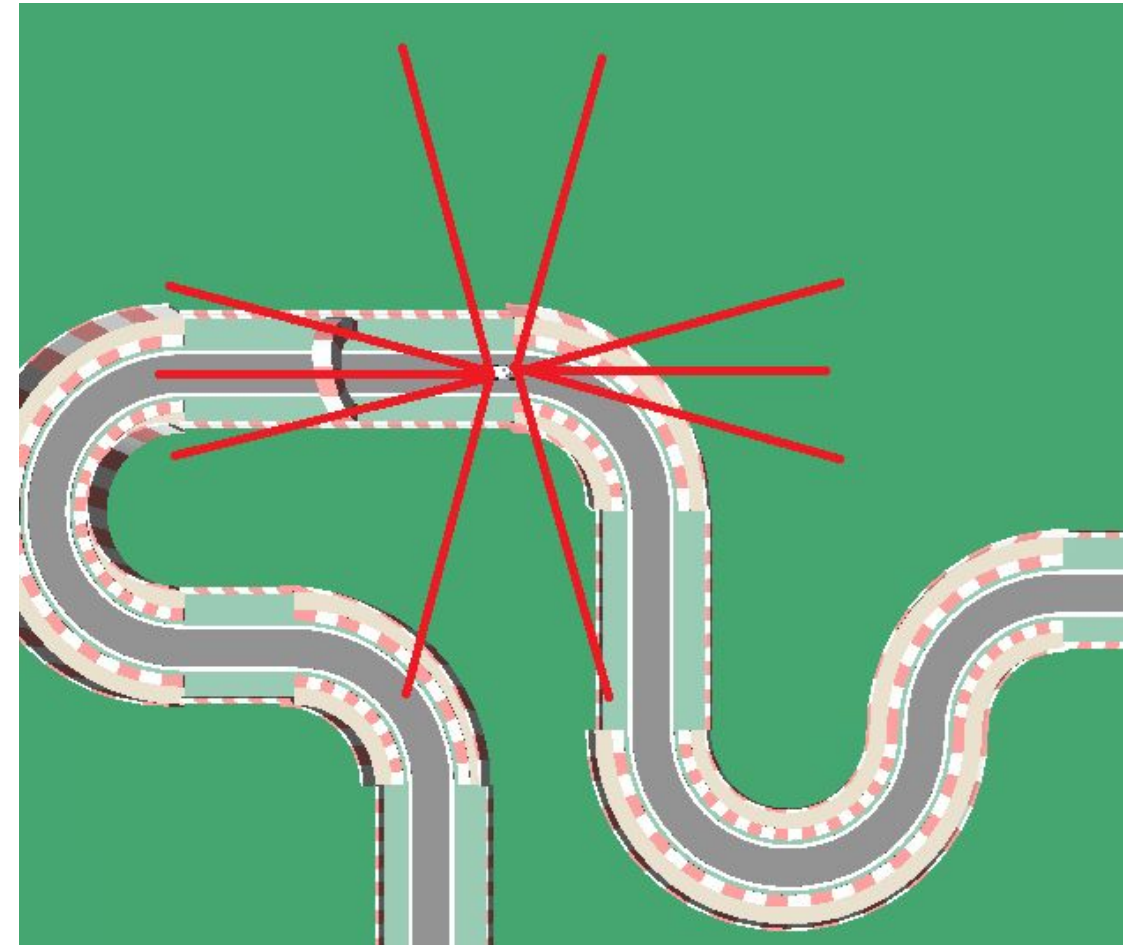
FormulaG Details

Your code is given 10 distance measurements around the car along with the car's position and speed information.

Simple: the example code steers towards the further wall based on the left and right distances to the front.

Insane: model the car's dynamics, build a map of the course as it drives conservatively at first, and plan out the best course to follow at max speed.

Challenges will be scored against new map layouts so don't hard-code logic for the example map!



2024 Challenges

MAY

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22 TODAY	23	24	25
26 Word Search						

JUNE

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23 Wordle	24	25	26	27	28	29
30						

JULY

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1	2	3	4	5	6
7	8	9	10	11	12	13
14 Reversi	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

AUGUST

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1	2	3
4 FormulaG	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

Finale!

Us slackers still need to finalize this...

Tentatively:

Mid September we'll have a live online event to show off entries collected throughout the Summer and announce the official winners. (Pending any tie breakers, identifying cheaters, coming up with bonus challenges...)

How to Join



<https://summeroflabview.com>

Create an account at:
<https://summeroflabview.com>



There is a link to the Discord server from the website.

How else can you help?

Run challenges at your local user groups and companies

Help out with challenge ideas! (Existing future plans: Maze solver, Lunar lander, Battleship)

You can make your own or add them to DBomm's backlog

Requirements for challenges:

- Packaged on VIPM
- Provides project template
- Supplies example implementation

If any of this interests you, post on the Discord!