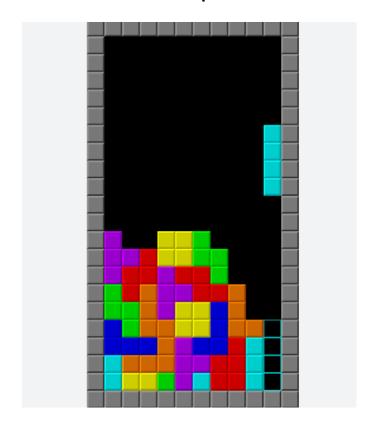


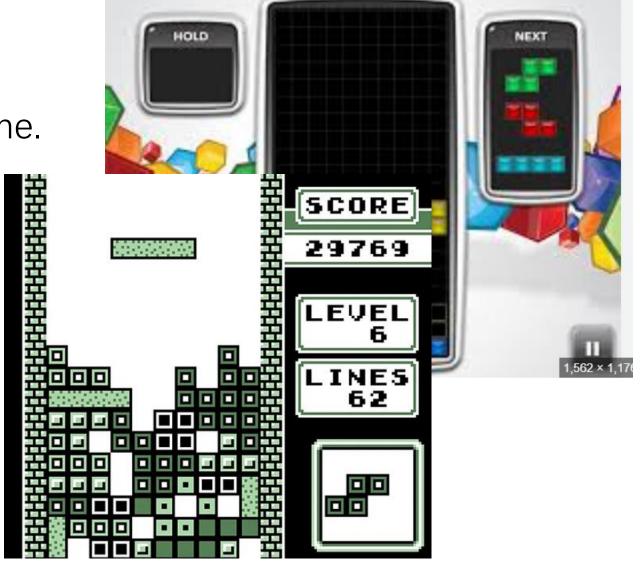
A Classic Game Reimagined on DE1 - SoC

Chuyi Jiang, Xinzi Yu Prof. Stephen A. Edwards Presented on May 13th

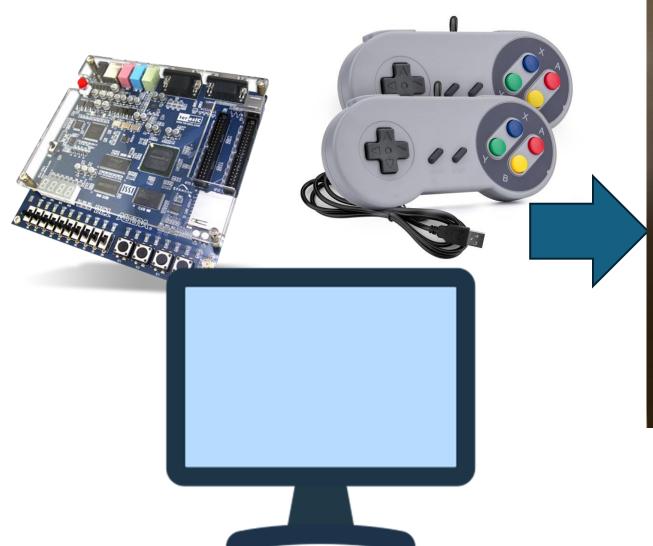
What is Tetris?

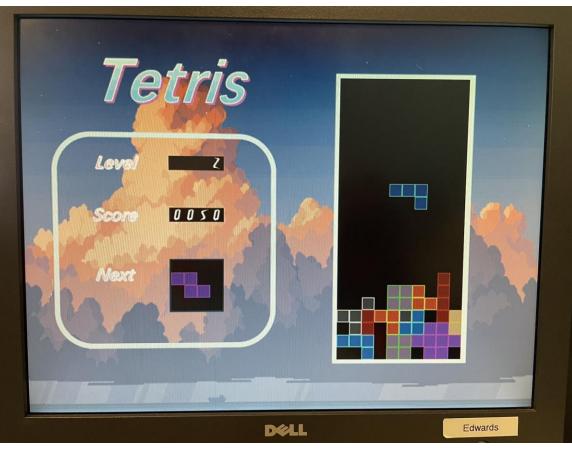
• A classic puzzle video game.





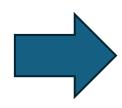
Overview





Architecture

Joystick Control Input



Game: Move, Delete Row, Rotate, Next Block, Speed Score, Pause

Avalon Bus:

- 7 signal
- Blocks, deleting row, score, speed, next block, reset, pause

Audio, Earphone

VGA, Monitor

Core: Store data Show images

Hardware Design

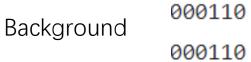
Avalon bus data:

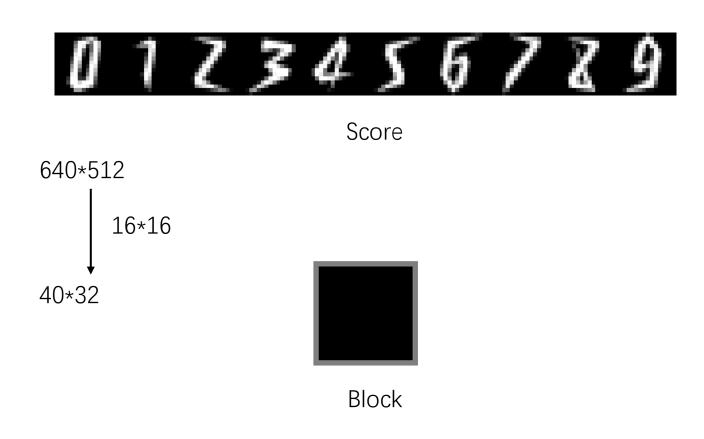
Give the information and state Display data Mem File -Virtual Rom Core Audio address Update Block

Graph

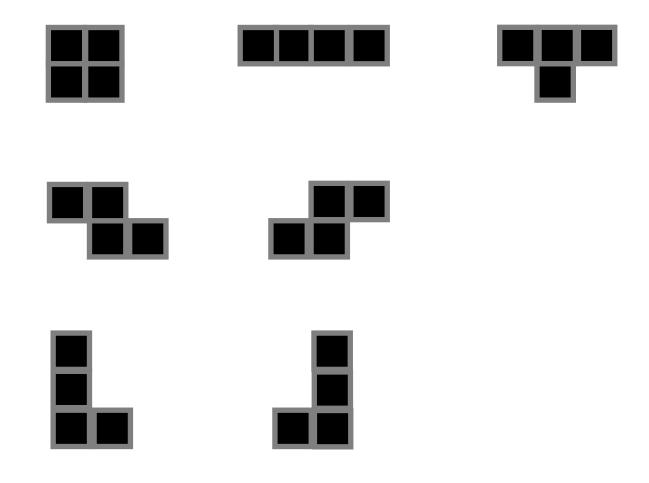
Color palette with 64 colors



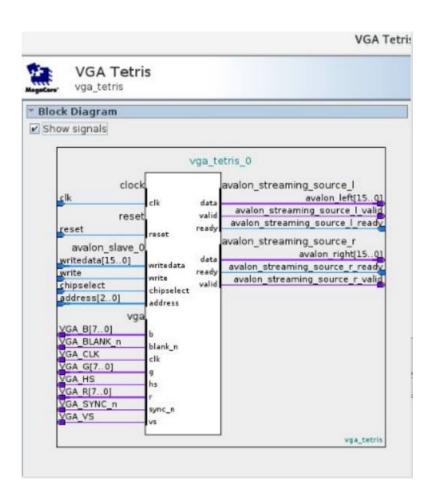




Shape



Audio



- 16 bits, 8kHz, mono Audio fragment
- Transfer .wav file to .mem
- The clock's frequency is 50MHz and our music's sample frequency is 8kHZ
- For different speed, use different constant to divide the clock frequency as equal to music's samples

Software

Controller



Software

Joypad order

• Logic

'start'. Update score & Generate a shape block state if rows are deleted Delete Row? Automatically move down NO NO Over? Update block state Yes Reach bottom?

Initial the game when press

Avalon Bus data

address	15 14 13 12 13	. 10 9 8 7	6 5 4	3 2 1 0	
0	row	column	type	rotation	Block information
1			r	num for deleted row	Row to delete
2	score 1	score 2	score 3	score 4	Scores
3				next type	Next Block type
4				speed	Speed
5				reset	Reset
6				о р	Paused or Over

Conclusion

Rom to store image and audio

Joystick

- Further:
 - Add special audio when deleting rows
 - Create special tools help to quick deleting blocks when reaching certain scores
 - Support two players battling

