

Pyvatar

[Pyvatar](#) is an open source game development framework for iOS and Android smartphones. The Pyvatar game editor is written in Python, runs on Windows and Linux, and is based on an open source Python library used for developing cross-platform apps called Kivy. All Pyvatar games are written in Python. All game action takes place in rectangular cells, which may be nested. All animation (in Version 1.0) is limited to game objects moving horizontally or vertically, along a line connecting the center of a cell to one of its borders. All games can be run in single-player and/or 2-player mode (using Bluetooth). Single-player mode allows the user to click on a particular corner of the screen to swap players, for games which also run in 2-player mode. The main goal of Pyvatar is to radically simplify the development of 2-player games which run on smartphones.

User Classes

1. **Guest:** play all games in single-player mode
2. **Bronze:** must register, can play up to 3 games in 2-player mode
3. **Designer:** a limit of two 2-player game clients exists for games created by Designers, who are allowed to add and delete valid end-users
4. **Silver:** \$10 – can play up to 12 games in 2-player mode, may also be Designers
5. **Gold:** \$20 – can play an unlimited no. of games in 2-player mode, may also be Designers
6. **Platinum:** \$50 – can design an unlimited no. of games in 2-player mode

All users (except guests) must first log in in order to download games. Users can use either their Facebook or Google IDs to log in. After a user logs in, her event counts (since previous session) are uploaded, in order to gauge the relative popularity of each game. Every time an event is triggered during game play, the corresponding event count is incremented for the current game.

Class Hierarchy

root-type

- object-type
 - widget-type
 - sprite-type
 - player-type
 - character-type (NPC)
- cell-type
- door-type
- event-type

Game Components

Cell:

- parent
- next
- child
- class-name
- row-idx
- col-idx
- left
- top
- width
- height
- door-list (len = 4)
- cell flags

Door:

- is-door
- is-locked
- key-code
- polygon object
 - single-sided polygon
- jump-dest (cell object)

Cell flags:

- is-rows
 - child cells are organized in rows, one above the other
- is-grid
 - child cells are organized in a grid with column widths and row heights that may vary
- is-scroll
 - child cells appear in a scrolling window whose boundaries coincide with the current cell
- is-smooth
 - child objects are animated instead of moving instantaneously from cell to cell
- is-adj-cross
 - is-grid equals false
 - when child objects move between cells, the destination cell is determined by its position directly opposite the source cell (otherwise the destination cell is located in the zero-th row/column of its parent cell)
- is-leaf
 - contains no child cells
- is-full-screen
 - contents occupy user's entire display screen
- merged-rows, merged-cols
 - is-grid equals true
 - cells to right and/or below are merged into a single cell
- is-merged
 - cell is hidden, since it is situated to right or below a cell with non-zero values for merged-rows and/or merged-cols

Object:

- cell
- next object
- class-name
- width, height: pixels, before scaling
- scale-factor
- list of primitives

Primitive:

- image (converted from base 64 at download time)
- rectangle
- rounded-rect
- ellipse
- polygon
- vector
- text
- common parameters: (x, y) in pixels

Event:

- click (and double-click)
- scroll
- move (to adjacent cell)
- enter
- exit
- resize (of bounding box)
- key-press
- timer (does not increment popularity counter)
- events can either succeed or fail (be suppressed)

Autistic Programmers

I hope to hire 2 full-time autistic programmers. I will use a Danish company called Specialisterne, which recruits autistic IT personnel and has an office in Toronto. The 1st autistic programmer works in my condo, and the 2nd autistic programmer does mostly testing and sample game design, working from home. All employee salaries will be paid by a grant I hope to secure from CAMH Foundation. If Pyvatar turns out to be profitable, then I will repay that grant money back to CAMH Foundation, with interest.

Business Plan

1. Submit grant proposal to CAMH Foundation
2. Write test game
3. Learn Kivy
4. Write detailed design specs of Linux-based game editor
5. Start working on web site
6. Hire autistic programmer #1 using Specialisterne
7. Programmer #1 implements barebones game editor, w/o animation
8. Programmer #1 finishes game editor, while I port barebones game editor to Windows
9. Implement game clients for Android and iOS
10. Finish porting game editor to Windows
11. Hire autistic programmer #2
12. Finish web site
13. Create Indiegogo campaign (target = \$7200) with following perks:
 1. \$1 – Display donor's name in scrolling list on web site (all perks)
 2. \$5 – Silver class membership for one year
 3. \$10 – Gold class membership for one year
 4. \$25 – Platinum class membership for one year
14. Go live
15. Everyone is Platinum for first 6 months
16. Implement sound
17. Implement alternative cell graphics:
 1. Hex grid
 2. Overhead view
 3. Side view
 4. Isometric view
 5. Full 3D
18. Create app store one year after going live:
 - Transaction fees of 20 percent of each purchase (including in-app purchases such as magic swords)
 - Platinum users sell games to Silver users and higher
 - Sellers' PayPal accounts updated monthly
 - Buyers' credit cards charged upon prepayment (minimum amount is \$6)

About Me

I am Mike Hahn, the founder of Pyvatar, and my diagnosis is schizophrenia and depression. I have been working on Pyvatar and its predecessors (sporadically) for almost 2 decades. Between July 2012 and December 6, 2013 I took a break from Pyvatar to develop a database of mental health resources, and then abandoned it. I was previously employed at Brooklyn Computer Systems as a Delphi Programmer, and most recently as a Technical Writer, for almost 17 years. However, at the beginning of 2013 my BCS job came to an end. I now use software development to fill my days. For fun I go online and read the news, and most evenings I watch on my laptop yesterday's *The National*, a CBC TV news show, or *60 Minutes*. I'm also a volunteer tutor at Fred Victor on Tuesday afternoons, where I teach math, computers, and literacy.

Although my background is database programming, by the time Pyvatar goes live in late 2014 (or thereabouts) I hope to become an expert Python Programmer. It is my ambition, by implementing Pyvatar, to make a significant contribution to the field of game development frameworks, thereby helping developers everywhere to more easily create games for smartphones.

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Revenue

1. Amount raised by the Indiegogo campaign (one-time only)
2. Silver, gold, and platinum membership fees of \$10, \$20, and \$50, respectively, charged to the user's credit card
 - o Upgrading costs the difference between the existing and new membership. These fees are one-time purchases, they need not be renewed annually, instead they last indefinitely.
3. App store purchases (the app store is rolled out one year after going live):
 1. Transaction fees of 20 percent of each purchase (including in-app purchases such as magic swords)
 2. Platinum users sell games to Silver users and higher
 3. Sellers' PayPal accounts updated monthly
 4. Buyers' credit cards charged upon prepayment (minimum amount is \$6)
2. Upgrades to Pyvatar are charged to the credit cards of Platinum users, amount is between \$10 and \$20 depending on how many more features have been added since the previous version

Expenses

1. Salaries of 2 full-time Python programmers (recent grads) for up to one year
2. Dedicated servers usually cost about \$125 per month (at first I will only need one of these, but that may change).
3. Google AdWords advertising, in which those doing Google searches for say "game creation system" click on my ad and I get charged on a per-click basis. The more I pay Google, the higher the likelihood that my ad will be displayed on the right-hand side of the user's browser window whenever they search for keywords/phrases which I specify in advance (these fees may be 10 cents, or a dollar, or some other amount of money, per click).
4. Cost of setting up and maintaining the app store
5. Domain name, about \$15 per year
6. Registration fee of \$60 for 5 years, to register the company name Pyvatar in Ontario
7. Computer hardware/software: 3 laptops
8. Fees paid to Internet Service Provider of \$40/month
9. Accounting fees paid to Riel Hahn (income tax preparation)