

# Scripting Languages for Interactive Fiction

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# Agenda

**About me**

**Interactive fiction and its sub-genres**

**Hypertext Interactive Fiction as an entry point**

**Helping underrepresented voices**

**Introducing Twine and Harlowe**

**That time I wrote an interactive fiction in Guile**

**Opinion: Your introductory language is too complicated**

**Conclusion: Minimalism is empowering**

# Who am I?

## **I neglectfully maintain**

- **guile ncurses**
- **guile curl**
- **guile ispell**
- **libzmodem: a ZModem library for BBSs**

## **I am actively working**

- **guile-gi: yet another GObject Introspection library**

## **I can help you with**

- **USA Gov't standards for software and hardware procurement**
- **real-time, embedded C/C++ for low size, weight and power systems**
- **GPS**

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# What is Interactive Fiction?

**Interactive fiction is a type of game**

- **Text-only or text-dominant**
- **Focuses on story and puzzles**
- **Not real time**
- **Describes a situation then expects the user to make a choice or decision**

# Three sub-genres of interactive fiction

## Classic Interactive Fiction

Uses text parser for input  
Usually focuses on object or logic puzzles

## Hypertext Interactive Fiction

Uses hyperlinks as input  
More narrative in style

## Visual novels

More graphical  
Typically presents pictures of characters with associated dialog  
Usually focuses on dialog and character relationships  
Uses hyperlinks or mouse interaction as input

# Classic Interactive Fiction

## WEST OF HOUSE

This is an open field west of a white house, with a boarded front door.

There is a small mailbox here.

A rubber mat saying 'Welcome to Zork!' lies by the door.

```
> open door
```

The door cannot be opened.

```
> look under mat
```

There is nothing interesting there.

# Hypertext Interactive Fiction

You reach out and run your hand down her back a couple times. She carefully lowers her paw and sets it down on the couch. Cassie turns her head back to watch what you're doing. She doesn't look interested, exactly, but it's not like she's suddenly remembered pressing business elsewhere, either.

Behold her majesty.

Rub her back some more.

Skritch behind her ears.

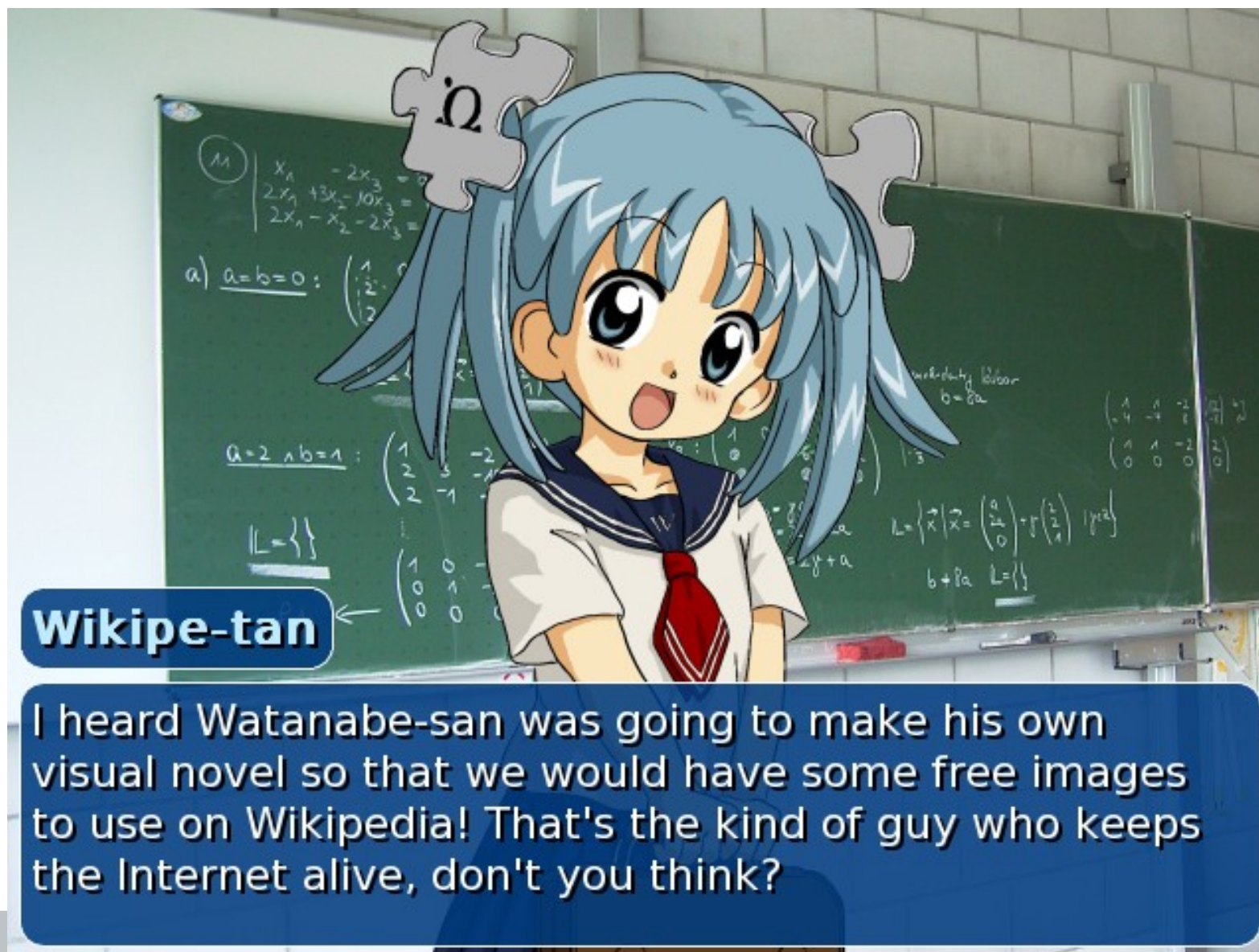
Stroke those soft soft cheeks.

Yes. Go for the belly.

From "Cat Petting Simulator 2014"



# Visual Novels



# Underrepresented Voices

**The hypertext interactive fiction scene has a wide variety of authors and topics**

**Let's look at four unusual games from underrepresented voices:**

Beneath Floes – addresses Nunavut culture

Depression Quest – addresses depression

Thread (Lucid Thread Games) – addresses veterans and PTSD

As Cold as the Grave – queer romance

# As Cold as the Grave

**“Three times. As the heir to the throne, you have to visit the ruler of the Fae three times.**

**Unfortunately for you, you have to meet with the Queen of the Unseelie Fae.**

**No one has had to deal with her before.”**

**<https://drazillion.itch.io/as-cold-as-the-grave>**

# Beneath Floes

**“Qikiqtaaluk, 1962. The sun falls below the horizon and won't return for months. You wander the broken shoreline, wary of your mother's stories about the qalupalik. Fish woman, stealer of wayward children: she dwells beneath the ice.”**

Beneath Floes

# Depression Quest

**“Depression Quest is an interactive fiction game where you play as someone living with depression.”**

**This game aims to show other sufferers of depression that they are not alone in their feelings, and to illustrate to people who may not understand the illness the depths of what it can do to people.”**

# Thread

**“Thread is an interactive experience that puts you in the shoes of a person coping with PTSD.”**

**<https://www.lucidthreadgames.com/>**

# Importance of Hypertext Interactive Fiction for Underrepresented Voices

**There are some easy to find academic studies on LGBTQ Twine games.**

**Of the 2000+ Twine games on itch.io, 100+ are tagged by their authors as LGBTQ+**

**Games commentators such as Feminist Frequency have highlighted the importance of Twine.**

# Digression: NaNoWriMo

**National Novel Writing Month (NaNoWriMo) is an annual writing event. Thousands of amateur authors pledge to write 50,000 word novels during the month of November.**

**NaNoWriMo hosts group gatherings. Authors meet and write together.**

## **TOP NANOWRIMO NOVEL TOPICS**

- 1. Magick**
- 2. Romance**
- 3. Lesbians**
- 4. Vampires**

**Most of these novels awful.**

**Who cares! You do you!**

**My “best” novel was about a college student who finds out he’s a robot, and then goes on a road trip of discovery. It was garbage.**

**When anyone can participate, you see different topics!**



# Who Makes Tiny, Personal Games

**So you want to make a game?**

**It will never make any money.**

**Likely, only a couple of friends will play it.**

**Do it anyway.**

## **The Enthalpy of Games**

I have the time and energy do hundreds of hours of free labor

I have the skill

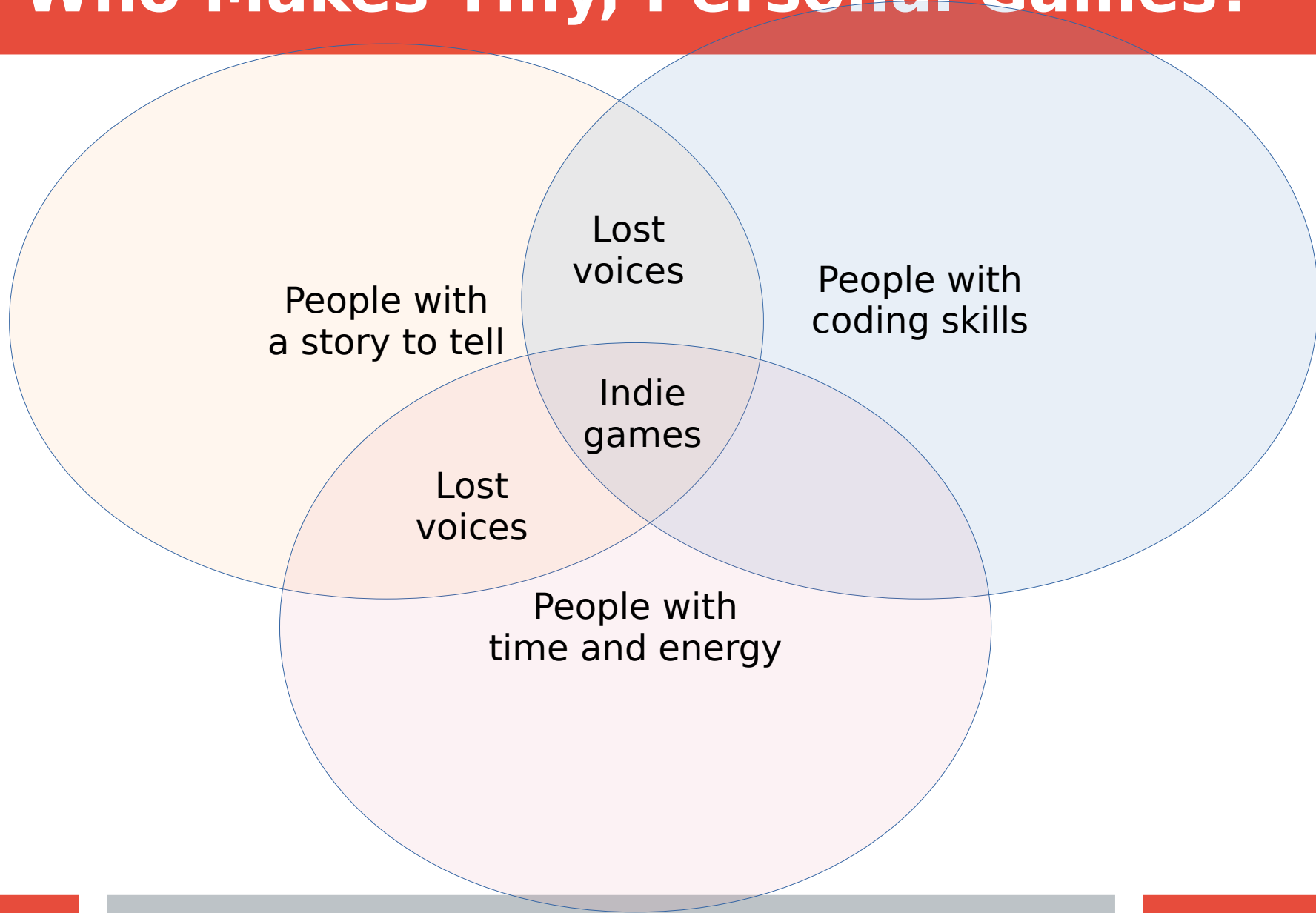
I have the vision

I have the dedication

**H = time + skill + vision + dedication**

**Games that exist have  $H > H_{\min}$**

# Who Makes Tiny, Personal Games?



# Interactive Fiction's Domain Specific Languages

**There are many domain-specific languages created to write interactive fiction**

**The three sub-genres of interactive fiction have evolved separate creation tools**

## **Classic Interactive Fiction**

Inform, ADRIFT, TADS

## **Hypertext Interactive Fiction**

Twine ft Harlowe, Twine ft Ice Cube

## **Visual Novels**

RenPy

# Twine + Harlowe

**I believe Twine + Harlowe is the simplest free tool to write hypertext interactive fiction**

**Harlowe is a templating language that converts Harlowe Script to HTML+JavaScript Bundles**

**Like HTML+PHP**

content is interrupted by delimited code

each top-level page is an “experience”

each top-level page is a closure and a scope

**Simple Harlowe is simple for any skill level, but, complicated Harlowe is still complicated**

# Demos!

**Demo's never work live.**

**But, hey, let's try!**

# Simplest Harlowe

A man is here. He is buried in the sand.  
Only his head is visible.

[[Continue on]]

[[Kick the head]]

Renders as text

Renders a hyperlink. On click, jumps to “Kick the Head” module.

Most Twine games use just this simple syntax

# Styles

**\*emphasis\***

**\*\*strong\*\***

**//italic//**

**Still simple.**

****

**(text-colour:fuchsia)[Fuchsia text]**

**Uh oh.**

# Variables and scope

```
(set: $size to "giant")
```

```
Your stomach makes {  
  (if: $size is 'giant') [  
    an intimidating rumble!  
  ] (else:) [  
    a faint gurgle  
  ] }.
```

**Our beautiful readability is already breaking down.**

**The sigils '\$' and '\_' on variables indicate local and global scope respectively**



# Control structures

```
(for: each _item, ...$arr) [You have the _item.]
```

**prints "You have the " and the item, for each item in \$arr.**

```
(for: _ingredient where it contains "petal", ...  
$reagents) [Cook the _ingredient?]
```

**prints "Cook the " and the string, for each string in \$reagents which contains "petal".**

**Now we are in lambda territory.**

# Aside: The advantages and risks of Templating Languages

## Rewards

- **Focus on the task**
- **Avoid boilerplate**
- **Simplify**
- **Split up MVC or MVVM concerns**

## Risks

- **Because it is readable, you think you understand it**
- **Leaky abstractions**
- **Debugging experience may suffer**
- **Often, makes simple simpler, but, make complex things even more complicated**

# That time I wrote an interactive fiction in Guile

**Wanted to participate in Lisp Game Jam**

**Inspired by Twine & RenPy**

**Tried to make simple script**

**Eventually, newb-friendly readability of scheme is limited**

```
((Scheme (is) (scheme)))
```

**Other readers remix Scheme**

WISP is a Python-like syntax for Scheme

Guile-Reader adds some flexibility to the reader

# Code snippet from my Interactive Fiction

```
(define (Seventeen)
  (You-speak-text
    "Perhaps you " '(i "should") " say something about the
hotel.  It is..."
    "\n⇒ "
    `(a (@ (action ,EighteenA) "elaborately furnished")
    "\n⇒ "
    `(a (@ (action ,EighteenB) "exceedingly expensive"))))
```

**So reasonable readable for a Scheme hacker, but, quasiquote and SXML notation is not so friendly.**

# Publishing and Sharing my Guile Game

## Getting my Guile/GTK3-based game as downloadable binaries for GNU/Linux and Windows was a brutal process

Statically linked everything

Installed Guile with relative, not absolute, paths

GTK3 on Windows is poorly supported

Guile on Windows (via MinGW) is 32-bit, single-threaded only

# Minimalism for Newbs != Minimalism for Geeks

## Minimalism for Newbs

Easy to learn

Easy to understand

Easy to fix

Easy to share

## Minimalism for Geeks

Easy to define

Easy to explain

Easy to parse

Easy to run

I'm stereotyping and making overly broad statements.  
Don't @ me, bro.

# Opinion: Your Language is too Complicated

**I started on BASIC on the TRS-80**

```
10 PRINT "POOPY "  
20 GOTO 10
```

**... and hijinks ensue**

**You may recoil at old BASIC, but, it was the start of my journey**

**How should kids in 2019 start on their journey?**

# Simplicity in Sharing Cannot Be an Afterthought

**Hey, wanna see my program?**



# Simplicity in Publishing and Sharing

**Kids these days expect all games to be browser, app or Steam.**

**So (for free software) you have to target the browser.**

**There are several websites that will let you publish your Twine game.**

**Sharing your game with friends is fairly simple.**

**itch.io**

**philome.la**

**newgrouds.com**

# A Generic Publishing and Sharing Strategy

**I wish other small languages had a simple way to share.**

**Possible paths for a sharing site for other console languages...**

## **Path 1**

Compile to web assembly

## **Path 2**

Use JS term emulator

Communicate websockets to language instance port

Use CloudABI or containers to make safe interpreter instance

# Conclusion: Minimalism is Empowering

## **Tools like Twine+Harlowe (and to a lesser extent, RenPy) have low barrier to entry**

The syntax is expressive for the problem set

The development environment supports the syntax

Sharing or rehosting a completed work is simple

Online services exist to host and run completed works

## **When that barrier to entry is low enough, the created works can represent a broader range of voices**

In Twine's simplest forms, any storyteller can approach it.

# Thus endeth the lesson

## **Luke 24:10-12**

**It was Mary Magdalene and Joanna, and Mary the mother of James, and other women that were with them, which told these things unto the apostles. And their words seemed to them as idle tales, and they believed them not.**