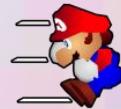


# Speedrunning Glitch Hunting



Tricks to find Tricks & Tips to find Skips



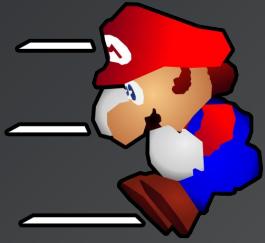
By Auride (<https://auride.love>), Ashley93oBTW (<https://www.twitch.tv/ashley93obtw>),  
aloyark (<https://www.twitch.tv/aloyarkk/>), WitherMin (<https://www.twitch.tv/withermin>), and  
Waezone (<https://www.twitch.tv/waezone>)



# Speed Science

- All runs have tech.
  - Glitches
  - Skips
  - Tricks
  - Strats
  - Exploits
  - Setups
  - Mechanics
  - Cheese
- **BUT HOW DO THESE PEOPLE FIND THIS STUFF???**





Where to start?



# Prior Art

- Understand what's already known.
- Talk to existing community members.
- Find, create, and improve resources:
  - [Wikis](#)
  - [Text guides](#)
  - [Videos](#)
  - [Tools](#)
  - [Data](#)
  - [Collision visualizations](#)

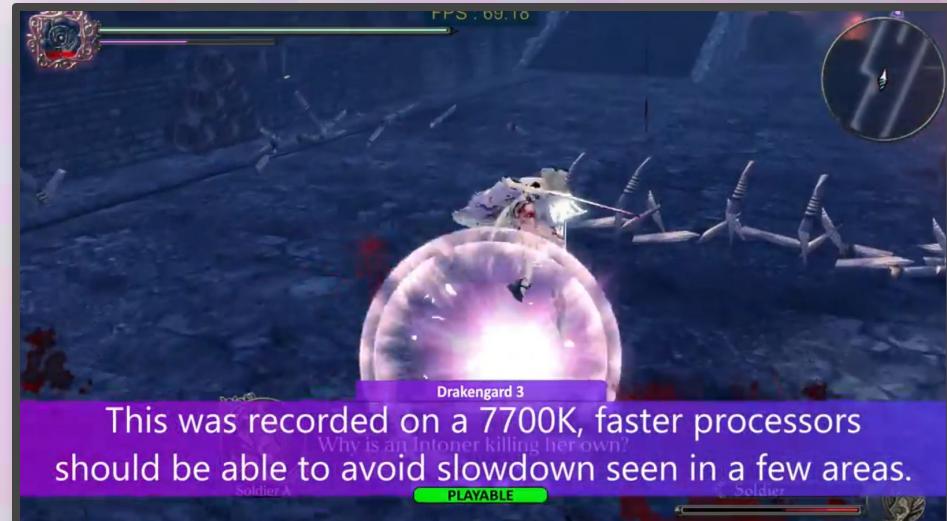
- Explore related communities around the game (e.g. modding)
- **Always ask questions.**

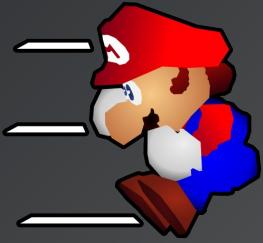
The screenshot shows a Wikipedia-style page titled "Catcall Poltergeist Skip". The page header includes links for "Read", "Edit", "View history", and "Search Okami Speedrun Wiki". The main content area contains a note about a glitch, an explanation of the exploit, and a link to a demonstration video. Below this is a section titled "Collision Images" with three screenshots showing collision volumes around a game object. At the bottom is a category link for "Glitches".



# Prior Art - Replication and Testing

- Don't assume community knowledge is gospel.
- Try everything yourself.
- Retime routes and strats.
- Example: DoD3 Jump Dash Lights
  - Tech was known since 2020  
<https://youtu.be/wGLxIO1lauA?t=19>
  - Wasn't tested to see if it was faster until 2021
  - **~30% faster**  
[https://youtu.be/DIC7\\_EA5ST8](https://youtu.be/DIC7_EA5ST8)



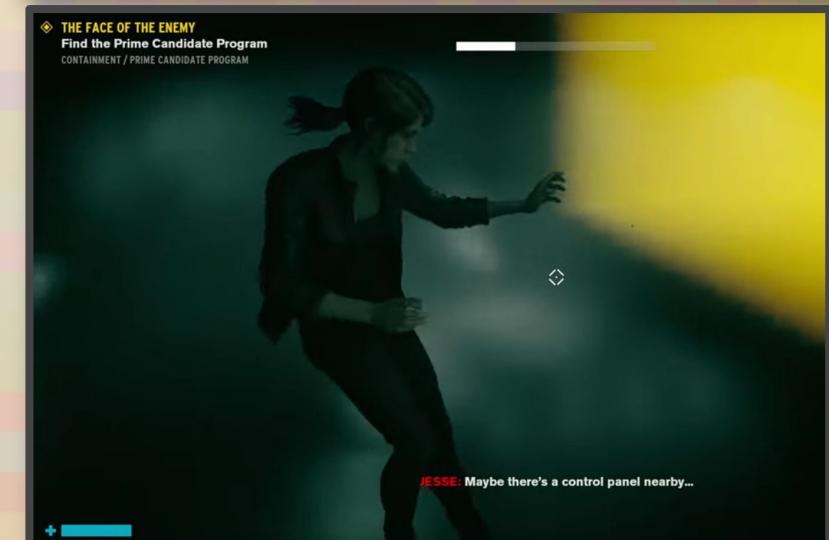


# Methodology



# New Physics

- Study poorly understood phenomena.
- Explore the edge of what's known.
- Take it to the limit.
- Example - Okami NG - D Boost
  - Poorly understood: [https://youtu.be/\\_mgII8rALKU](https://youtu.be/_mgII8rALKU)  
<https://youtu.be/XaulMp9UMMM>
  - New examples expand horizons:  
<https://youtu.be/-z01DiUm4xQ>  
<https://youtu.be/Hro65moK-SM>
  - Useful applications discovered:  
<https://youtu.be/i5hu-vo7mr0>  
[https://youtu.be/EvGgEN2\\_3Cw?t=5334](https://youtu.be/EvGgEN2_3Cw?t=5334)  
<https://youtu.be/qjFbOdZzRUw>  
<https://youtu.be/yI2yXQuIAY>
- Example - Control - Shieldy McSoary
  - Discovered by accident:  
<https://clips.twitch.tv/DarkObeseChickenOSfrog>  
<https://clips.twitch.tv/BrainyArbitraryWormKAPOW>  
<https://clips.twitch.tv/ModernCautiousAntHumbleLife>  
<https://www.twitch.tv/bryonato/clip/MotionlessCovertPizzaHeyGirl>
  - Discarded as being niche/unviable tech
  - Later discoveries made it the most iconic glitch in the run:  
<https://youtu.be/39sivP8ezhU>  
<https://youtu.be/Bi78NK84TMk?t=1848>

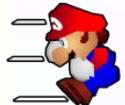




# The Engineering Method

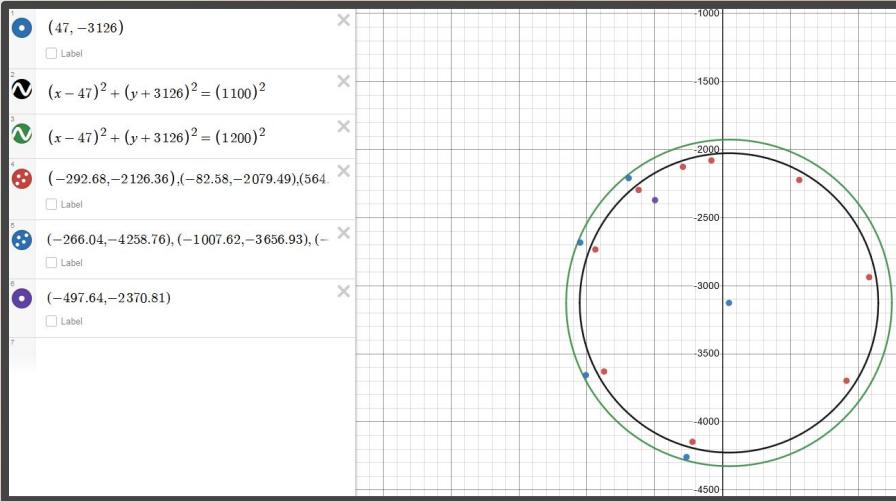
- Look for solutions where you have problems.
- Determine what's needed.
- Explore all available tools and techniques.
- Attempt every variation until success is achieved (or you give up).
- Optimise.
- Example: Okami - Oni Island Floor 1 Skip
  - Problem: Labyrinth is slow <https://youtu.be/sRRZ9IDqdBI?t=6346>
  - Technique: Corner Skew + Unskew Boost  
<https://www.twitch.tv/videos/84809002>
  - Solution: <https://youtu.be/au0eUIN0Zb8>
  - Optimization: <https://youtu.be/hGdGvpu6aFY>
- Example: NieR Replicant v1.22 - Flyers Skip
  - Problem: Flyers are slow <https://youtu.be/l5bbIJE9nss?t=2832>
  - Technique: Infinite height + triggers extend infinitely downward
  - Solution: <https://youtu.be/5rq95nr1ZrQ>

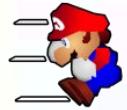




# The Scientific Method

- Choose a target to study
- Form a hypothesis
- Break out every tool of analysis
  - Reverse engineering
  - Data collection - memory watching
  - Asset dumping - collision visualization
  - Frame-by-frame analysis
- Example - Okami NG - Igloo Turtle Skip
  - Target of study: <https://youtu.be/k88UtutOe3g>
  - Incorrect hypothesis:  
<https://youtu.be/6FsajWiG7tE>
  - Studied in-depth, correct understanding:  
<https://youtu.be/XvcytZgzFCY>
- Example - Control - Wavedashing
  - First discovery: <https://youtu.be/DRaefCxi1VA>  
<https://youtu.be/4StgWOqW7qA>
  - Viability was unclear
  - Developed CSRM tool to analyze speed & better refine understanding of technique  
<https://youtu.be/dDK7R-IIQ0Q?t=1074>

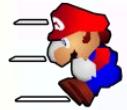




# Serendipity

- Always pay attention to the unexpected.
- Cast a wide net - search the internet.
- Explore every facet.
- Document everything - a useless tool might eventually be the perfect fit.
- Capitalize on every opportunity.
- Example - Okami NG+ All Brushes Ezofuji Interior Clip
  - Lucky discovery: <https://youtu.be/pV43r3Ijj2A>
  - Inspired innovation:  
<https://www.twitch.tv/videos/2456860348?t=1h46m53s>
- Example - Half-Life 2 Bill's Big Thrill
  - Discovery:  
<https://www.twitch.tv/billthethrill/clip/SpeedyAltruisticMochaDoubleRainbow>
  - First application:  
<https://www.twitch.tv/videos/399359828?filter=highlights&sort=time>
  - Refined application: [https://youtu.be/CBgo4WVG\\_3I?t=189](https://youtu.be/CBgo4WVG_3I?t=189)





# Serendipity (Cont.)

- Sonic Adventure - Death Cutscene Skip
  - Discovery: <https://youtu.be/9EKBFcyWtH4>
  - Application: <https://youtube.com/playlist?list=PLdYqUMnP-XFmfT2my6sPlbvESPV3NPdFd>





# Synthesis

- Combine the tools and techniques you already know.
- Recontextualize old knowledge.
- Try what you one before looking for a new way past a roadblock.
- Two useless mechanics might have undiscovered synergy together.
- Example - Okami NG Pot Skip
  - Tech 1: Destroying invisible pots:  
<https://youtu.be/5Wjfv3Bg0-o>
  - Tech 2: Agata Bridge Skip:  
<https://youtu.be/nvs5ZGcrjvU?t=887>
  - Tech 3: City Checkpoint Skip:  
<https://youtu.be/AjZOtO869Fo>
  - Tech 4: Fireburst Early:  
<https://youtu.be/z7W-vSBu4jc>
  - Synthesis: [https://youtu.be/Lla1W4\\_Qhxg](https://youtu.be/Lla1W4_Qhxg)

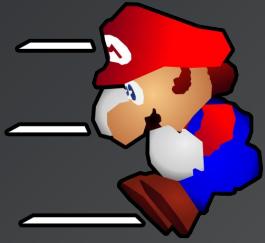




# Synthesis (cont.)

- Example - DoD3 Shop Skip
  - Tech 1: Cool Movement™:  
<https://youtu.be/3KsspblrwYc>
  - Tech 2: Swap Cancel:  
<https://youtu.be/jOIQoH3TXLQ>
  - Synthesis:  
[https://youtu.be/9ZEaprJ\\_XlQ?t=425](https://youtu.be/9ZEaprJ_XlQ?t=425)





# Universal Glitches



# Universal Glitches

- All computers inherit the original sin.
- Many games have the same kind of glitches.
  - Certain programming or design errors are extremely common
  - Especially if they share the same engine
- Dialog Storage / Walking While Talking
  - Maintain control of your character during a state (e.g. dialog) which is supposed to revoke it.
  - Use stored dialog to cancel other events.
  - Okami - Half Blue Skip  
<https://youtu.be/vPgBrd6I-g8?t=1308>
  - NieR Automata - EDS <https://youtu.be/YkSdJiASWjw>
  - Wind Waker - Double Storage  
<https://youtu.be/T8tKL3ifkoc>
  - Sonic '06 - Mission Storage Credits Warp  
[https://youtu.be/zMaBVvGsf\\_o?t=723](https://youtu.be/zMaBVvGsf_o?t=723)





# Universal Glitches

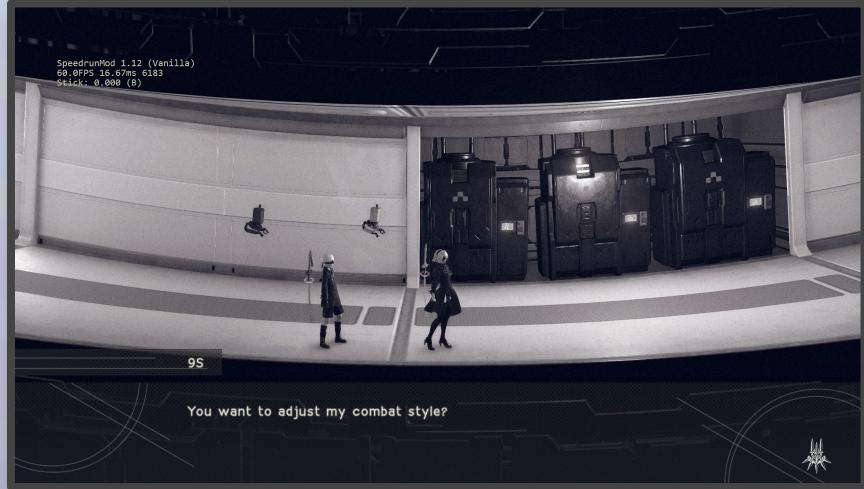
- Animation cancelling
  - Save time by ending player character or NPC animations early
- Examples:
  - Okami - Ground attack jump cancel  
<https://youtu.be/xalpezqPB4c>
  - Control - Wavedash  
<https://youtu.be/DRaefCx1VA>
  - Jedi Academy - Saber Switching  
<https://youtu.be/ScDYh12H0mY?t=30>
  - Star Wars: Republic Commando - Reload Cancelling  
<https://youtu.be/4vL6RMUQfwY?t=4284>
  - NieR: Automata - Self Destruct (SD)  
<https://youtu.be/pSp-msAFZII>





# Universal Glitches

- Dialog cancelling
  - Save time by ending player character or NPC dialog early
- Examples:
  - Portal 2 - New dialog cancels old  
<https://youtu.be/XIMb6QtBjBQ>
  - DoD3 - Octa Dialog Skip  
[https://youtu.be/9ZEaprJ\\_XIQ?t=2802](https://youtu.be/9ZEaprJ_XIQ?t=2802)
  - NieR Automata - Partner dialog cancel  
<https://youtu.be/b9AOXeG2RVY>
  - NieR Automata - Mansplaining  
<https://youtu.be/g8YQNvOubCg>





# Universal Glitches

- Bunnyhopping / Bypassing friction
  - Avoid losing momentum
  - Maintain a state where the game doesn't apply friction.
- Examples
  - Half-Life 1 - Bunnyhopping  
<https://youtu.be/cNTB4TQAts4?t=438>
  - Okami - Slope Hopping  
<https://youtu.be/LbsXr0gHtl?t=1607>
  - Ocarina of Time - Super Slide  
<https://youtu.be/UffGaLgfh6Y>
  - Twilight Princess - Break Slide  
<https://youtu.be/ivUBO2NV3uc?t=57>





# Universal Glitches

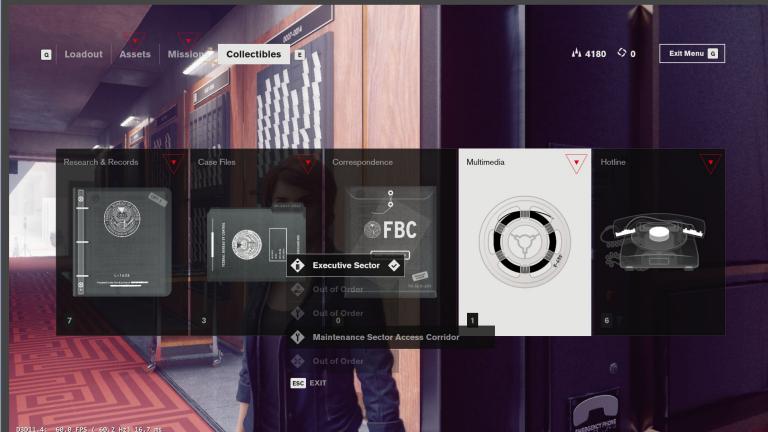
- Not limiting negative speed
  - Games often hard-cap forward velocity
  - A big negative number is still less than any positive number.
  - Programmers forgot to use `Math.abs()`
  - Move in unexpected ways
- Examples:
  - Super Mario 64 - Backwards Long Jump  
<https://youtu.be/a3QgV73-res>
  - Source Engine - ABH/ASH/AFH  
<https://youtu.be/j2N0FJ0dhAw?t=75>
  - The Wind Waker - Superswimming  
<https://youtu.be/kEF4ksaD9R4?t=13>





# Universal Glitches

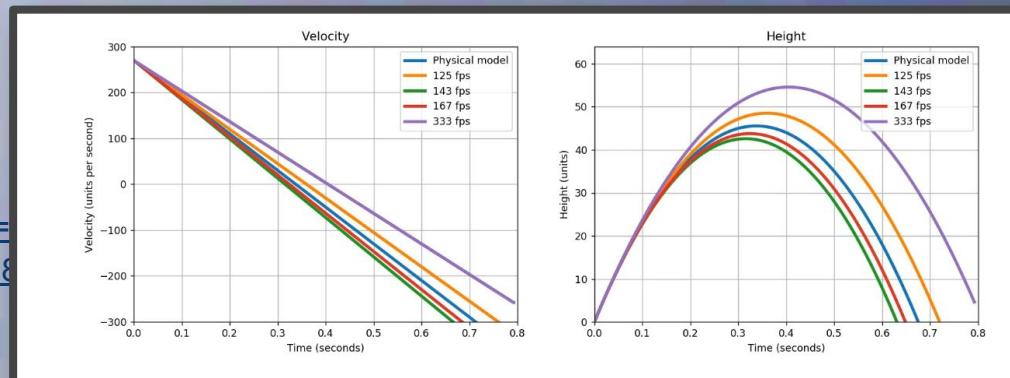
- Race conditions
  - 2 or more events on the same frame
  - Open 2 menus simultaneously
  - Start a process and then interfere with its completion
- Examples:
  - Ocarina of Time - Equip Swap  
<https://youtu.be/Ul2ipeV5npQ>
  - Control - Slidey McGunny  
<https://youtu.be/dDK7R-IIQ0Q?t=858>
  - Skyward Sword - Back in Time  
<https://youtu.be/ahoBmlhEg2k?t=21>
  - Super Mario World - Cloud Glitch  
<https://youtu.be/Vf8FiktWIJ4>
  - Billy Hatcher - Super Clippen Yeet  
<https://www.twitch.tv/videos/547591214?t=0h0m45s>
  - Sonic Adventure -
  - BoTW - Blight Skip <https://youtu.be/0KaX5dVFszk?t=1030>
  - Half-Life - Early Grenade  
<https://youtu.be/cNTB4TQAts4?t=889>
  - Half-Life 2 - Yes Clip  
[https://youtu.be/CBgo4WVG\\_3I?t=586](https://youtu.be/CBgo4WVG_3I?t=586)





# Universal Glitches

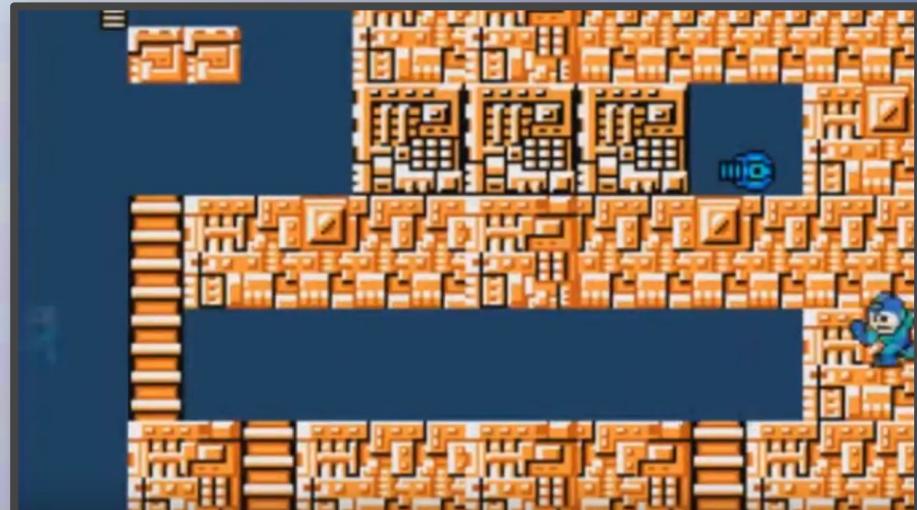
- Frame Rate-Dependent Physics
  - Many games have physics that assume a constant frame rate
  - Use a fast PC, limit FPS, or create excess lag to move faster, jump higher, and phase through walls.
- Examples
  - Indiana Jones and the Great Circle - Mantle  
[https://youtu.be/Yv8\\_HMpUY2U?t=1602](https://youtu.be/Yv8_HMpUY2U?t=1602)
  - Quake 3 (& descendants)
  - Half-Life 1 - NPC Turning  
<https://youtu.be/cNTB4TQAts4?t=59>
  - Resident Evil 2 REmake - Knifing  
15 hits: [https://youtu.be/\\_pPmek\\_c\\_OA?t=1](https://youtu.be/_pPmek_c_OA?t=1)  
35 hits: <https://youtu.be/xAnefW0nLH4?t=8>
  - NieR Replicant - Ladder Clip  
<https://youtu.be/e84SSkP7iNo>





# Universal Glitches

- Zipping
  - In tile-based 2d games, collision will try to push the player out.
  - What if “out” is actually *in*?
- Examples
  - Megaman <https://youtu.be/bR3EZwHFANQ>
  - Super Mario World  
<https://youtu.be/p7gKAYbn4Uw?t=404>
  - Sonic The Hedgehog  
<https://youtu.be/PbLhU5BOUsc?t=66>
  - The Legend of Zelda: A Link to the Past  
<https://youtu.be/WujTgBfvhfE?t=35>



# SGDQ 2025, The Fake University of Speedrunning



Bachelor of Speed Science (BSS)  
Thank you for watching!