

Speedrunning Glitch Hunting



Tricks to find Tricks & Tips to find Skips



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PANELS

Speedrunning Glitch Hunting

Tricks to find Tricks & Tips to find Skips

SPEEDRUNNING GLITCH HUNTING

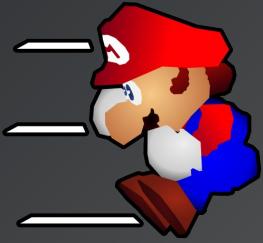
<https://youtu.be/O03z5hXijt4>



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 includes a note about a glitch, an explanation of the exploit, and three collision visualization images. The images show the 3D collision geometry of the game environment, specifically around a trigger volume for the Poltergeist enemy at the base of a tower. The collision volumes are highlighted in blue against the grey game world.

Catcall Poltergeist Skip

Note: This page describes a glitch, trick, or exploit. To see others, click [here](#).

Explanation [edit]

At the entrance of Catcall Tower, there is a larger trigger volume for the fight which introduces the Poltergeist enemy. By double jumping over the roots to Ammy's right after entering, and hugging the wall, it is possible to get around the trigger and skip the fight, saving about 15s.

Demonstration: <https://youtu.be/UONzBnX3-ls@>

Collision Images [edit]

A view of the collision around the fight trigger for the Poltergeist at the base of Catcall Tower. Some collision has been hidden to show the relevant parts.

Alternate view

Orthographic view from above. North is up.

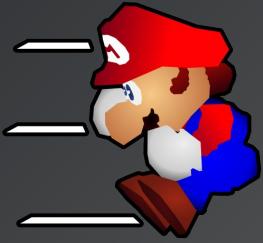
Category: Glitches



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





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/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/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>

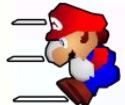




The Engineering Method

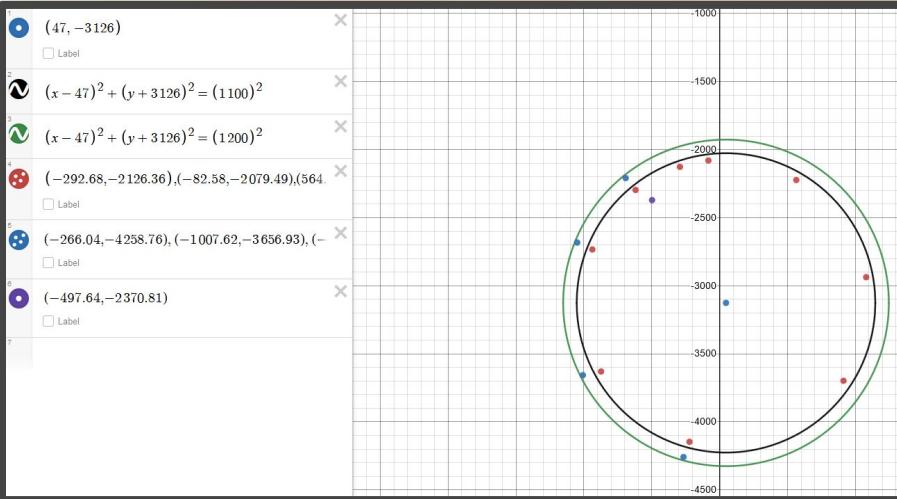
- Look for solutions where you have problems.
- Determine what's needed.
- Explore all available tools and techniques.
- Attempt every variation until success is achieved (or you give up).
- Optimise.
- Example: Okami - Oni Island Floor 1 Skip
 - Problem: Labyrinth is slow <https://youtu.be/sRRZ9IDqdBI?t=6346>
 - 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>

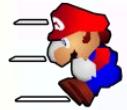




The Scientific Method

- 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?t=6928>
 - 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>

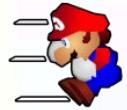




Serendipity

- 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





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 know 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/nvs5ZGcrjvU?t=1885>
 - Tech 4: Fireburst Early:
<https://youtu.be/z7W-vSBu4jc>
 - Synthesis: https://youtu.be/Lla1W4_Qhxg

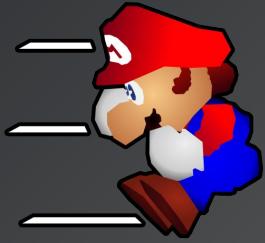




Synthesis (cont.)

- 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





Universal Glitches



Universal Glitches

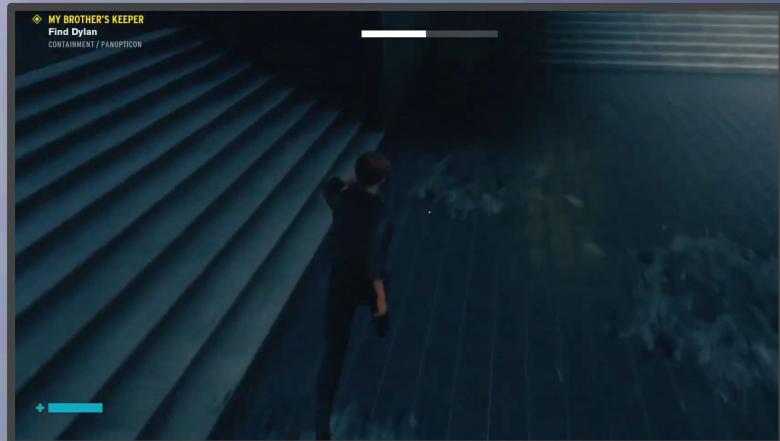
- All computers inherit the original sin.
- Many games have the same kind of glitches.
 - Certain programming or design errors are extremely common
 - Especially if they share the same engine
- Dialog Storage / Walking While Talking
 - Maintain control of your character during a state (e.g. dialog) which 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

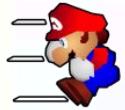




Universal Glitches

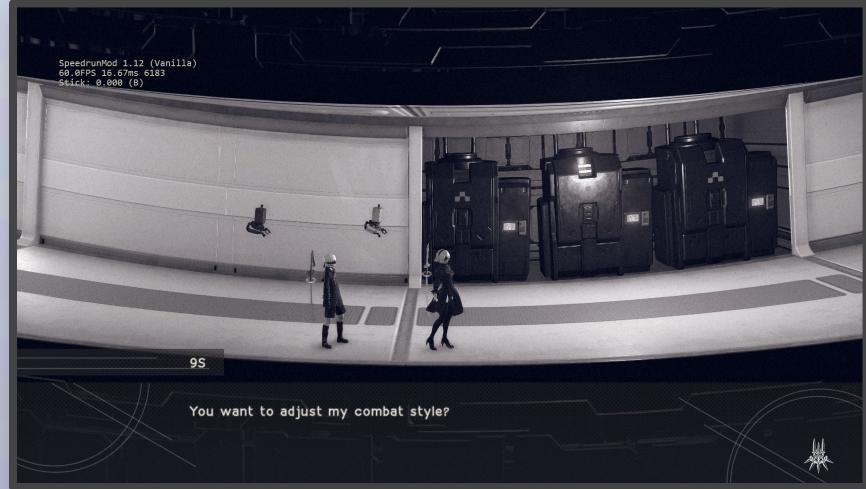
- Animation cancelling
 - Save time by ending player character or NPC animations early
- Examples:
 - Okami - Ground attack jump cancel
<https://youtu.be/xalpezqPB4c>
 - Control - Wavedash
<https://youtu.be/DRaefCx1VA>
 - Jedi Academy - Saber Switching
<https://youtu.be/ScDYh12H0mY?t=30>
 - Star Wars: 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
 - 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

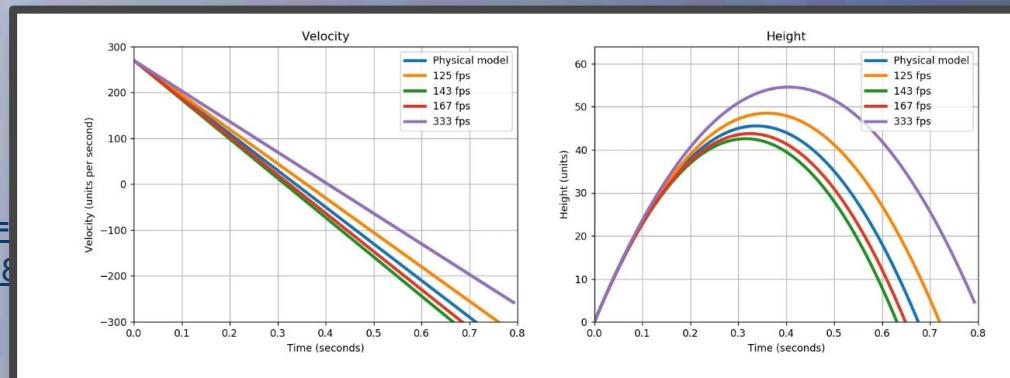
- Race conditions
 - 2 or more events on the same frame
 - Open 2 menus simultaneously
 - Start a process and then interfere with its completion
- Examples:
 - Ocarina of Time - Equip Swap
<https://youtu.be/Ul2ipeV5npQ>
 - Control - Slidey McGunny
<https://youtu.be/dDK7R-IIQ0Q?t=858>
 - Skyward Sword - 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>
 - 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





Universal Glitches

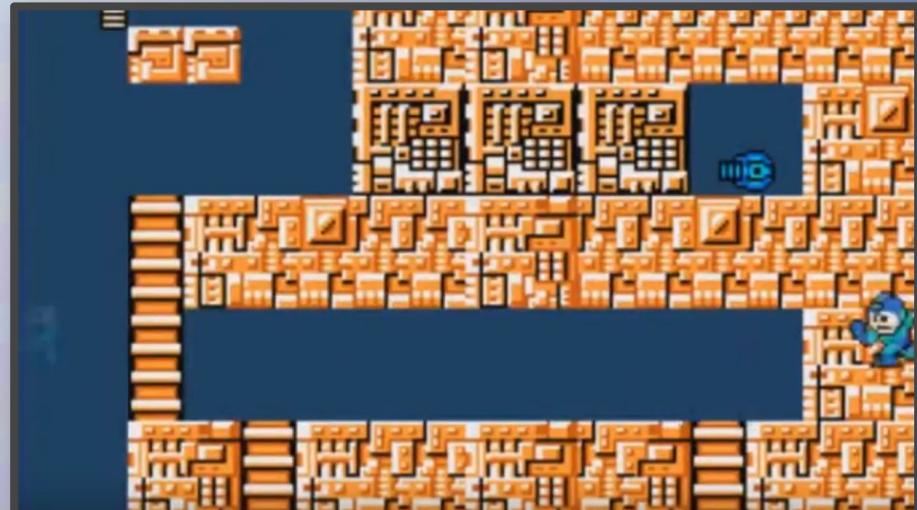
- Frame Rate-Dependent Physics
 - Many games have physics that assume a constant frame rate
 - Use a fast PC, limit FPS, or create excess lag to move faster, jump higher, and phase through walls.
- Examples
 - Indiana Jones and the Great Circle - Mantle
https://youtu.be/Yv8_HMpUY2U?t=1602
 - Quake 3 (& 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=8
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!