

LIE TO ME

聊聊HTML5多人实时在线游戏的「优化」

关于我

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国内最早折腾**HTML5**游戏的程序员之一

曾以独立游戏开发者自居

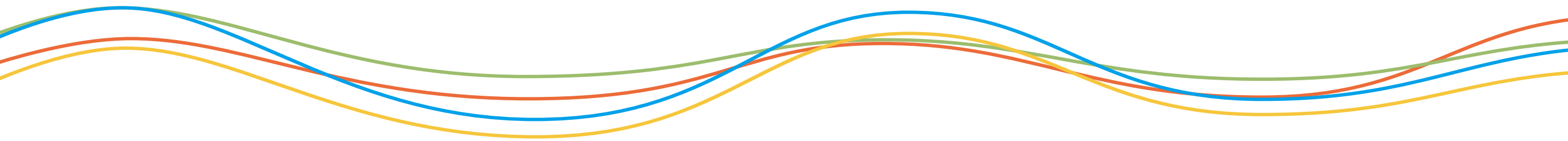
HTML5游戏的曾经

- 迷你小游戏
- 益智类休闲游戏
- 社交游戏
- 挂机
- 挂机 + X

实时对战游戏

<p>slither.io</p>  <p>The addictive game where you control a snake and grow by eating other players.</p>	<p>agar.io sites</p>  <p>The agar.io that we all know and love. Click here to see a long list of agar.io sites.</p>	<p>dlep.io</p>  <p>Insane fun! In this game you control a tank that you can upgrade and battle with.</p>	<p>limax.io</p>  <p>Can we call it a combination of agar.io and slither.io? Yeah, lets go with that.</p>
<p>*NEW* slash.io</p>  <p>BE THE NINJA ARROW. The new diep.io?? Use mouse gestures to slash your enemies!</p>	<p>*NEW* narwhale.io</p>  <p>Murder all the narwhales, grow your horn, MURDER MORE NARWHALES.</p>	<p>*NEW* massacre.io</p>  <p>Eviscerate your enemies, crush their bodies, Join the Massacre!</p>	<p>*NEW* meduzzza.io</p>  <p>Jellyfish FTW! Boost in front of your enemies and zap them to gain their mass!</p>
<p>entro.space</p>  <p>Thrust your way around outer space mining valuable ores and upgrading your ship!</p>	<p>wings.io</p>  <p>Are you into intense, high-speed dog fights? This game is for you!</p>	<p>supersnake.io</p>  <p>I know what you're thinking... Another slither game? Nope. This game is totally different!</p>	<p>superorbit.io</p>  <p>Battle spaceships in Outer Space... kinda like warin.space but faster!</p>

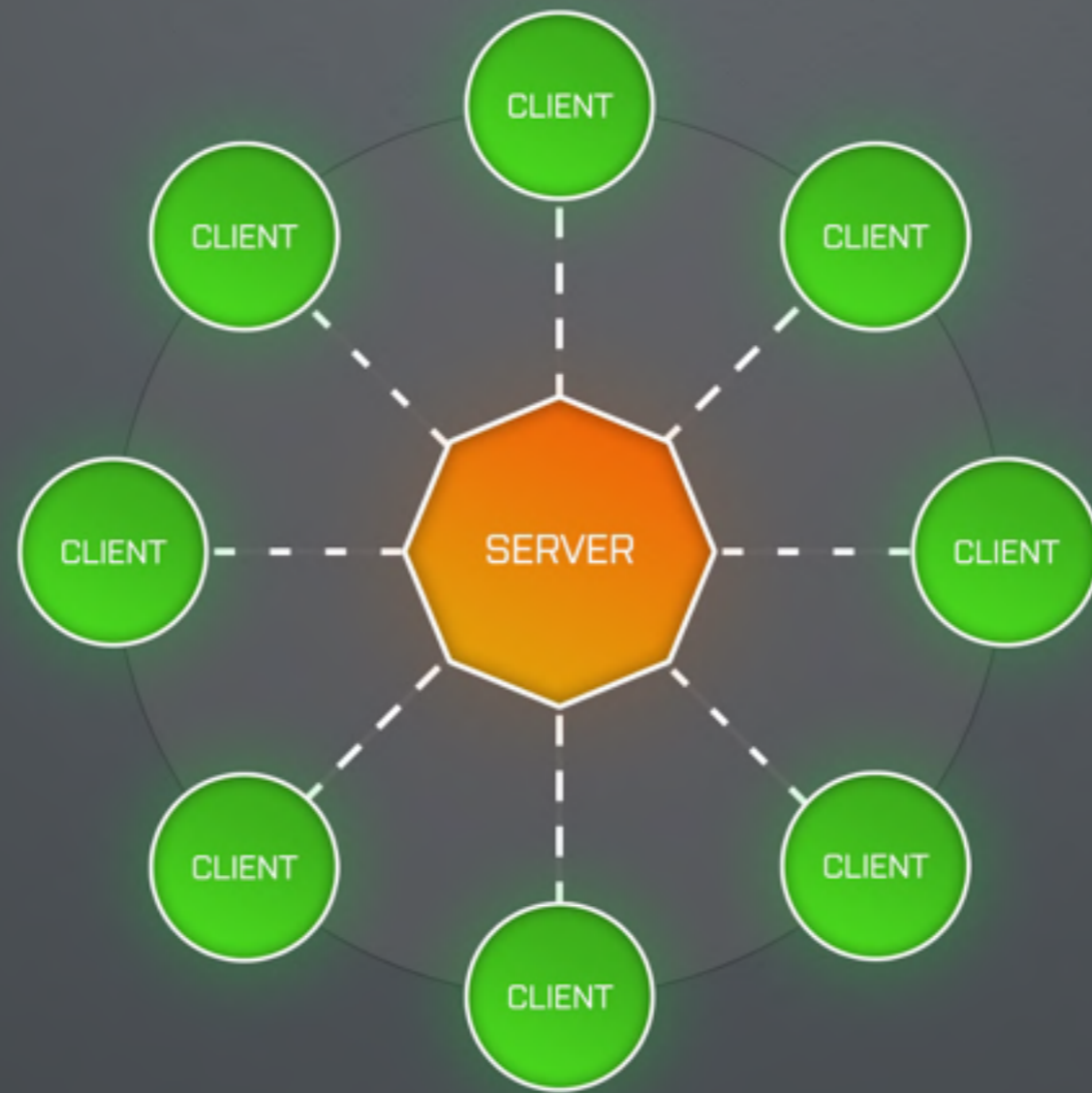
原理



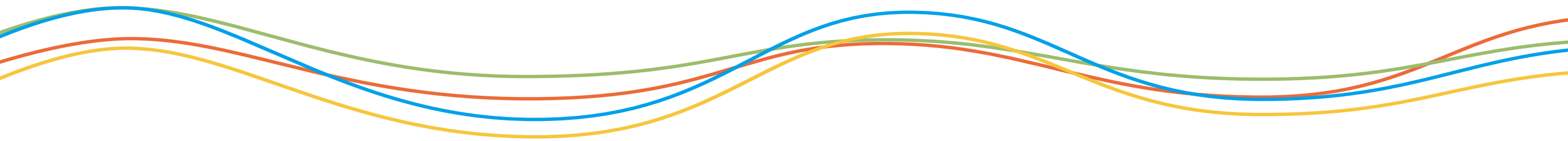
多人实时在线游戏的基本原理

- 客户端输入
- 服务端处理
- 服务端广播





“优化”



游戏特性

- 实时联网
- 控制单体
- 对角色的运动和位置敏感
- 注重操作
- 数据包小, 带宽要求低

底层优化

- UDP / TCP ?
 - WebSocket
 - WebRTC
 - TCP only
- 禁止socket使用纳格算法 (Nagle's algorithm)

底层优化

```
// allows external modification/inspection of handshake headers
self.emit('headers', headers);

socket.setTimeout(0);
socket.setNoDelay(true);
try {
  socket.write(headers.concat('', '').join('\r\n'));
}
catch (e) {
  // if the upgrade write fails, shut the connection down hard
  try { socket.destroy(); } catch (e) {}
  return;
}
```

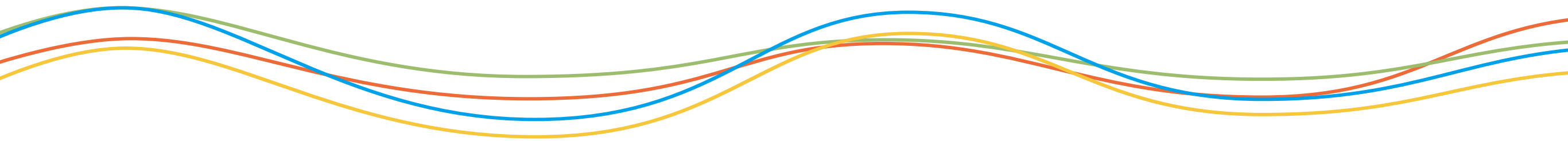
数据层优化

- 二进制
 - JSON to Binary , Binary to JSON
 - protobuf.js
- 核心价值
 - 省钱

「骗术」

- 客户端 自动适配的插值延迟
 - 消除位移波动
- 客户端 预测
 - 及时响应
 - 降低服务端推送频率
- 服务器不再权威
 - 不强求一致性

DEMO



「骗术」

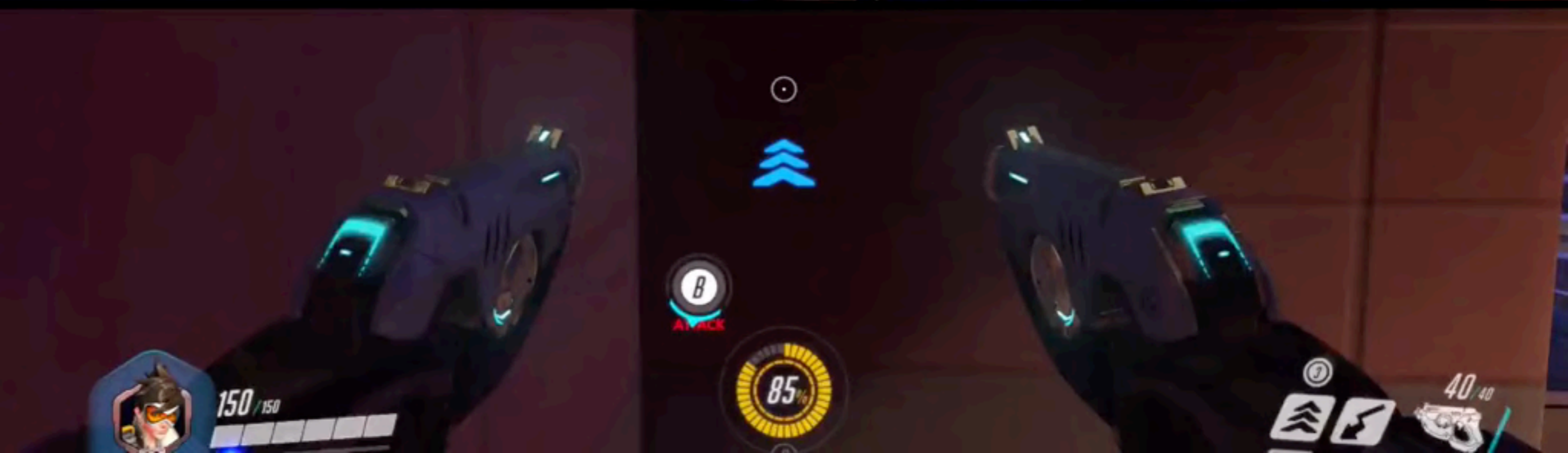
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400FPS

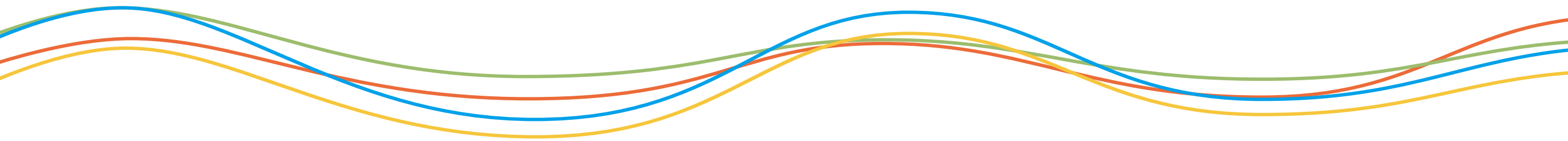
● REC







最后



你眼中的你

尽可能的一致

服务器眼中的你

尽可能的自然

别人眼中的你

THANK YOU

