

# UCI Computer Game Science

## Patterns for Networked Games



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**MENU**



**ROLL!**



# Why did Video Games Go Networked?

1) If you are playing on the same screen everyone can see that you are cheating, I mean, see your strategy.

2) Its hard to lug around your desktop computer to your friends house every time you want to play a game.

3) People are social, from what I understand, I haven't actually talked to people.

**MENU**



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**Bottoms**



# On the Menu

1. What kind of Game are we making?
2. Planning for your Network Game.
3. Common technologies
4. GOLO Game Demo
5. Normalizing your Data
6. Solving some problems
7. Code Examples

**MENU**



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# What kind of game are we making?

1. Is the game head to head or Multi-player?
2. Is it turned based or real time?
3. Is it persistent or transient?
4. Is it location based, camera based, social networked?
5. How many players are you expecting?

**MENU**



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# GOLO Case Study

1. Head to Head
2. Turn Based\*
3. Transient – Matches end
4. Social network with notifications
5. Lots hopefully... 😊 two at a time.

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# Planning for your networked game

- **Connection Modality**  
= connection-based or connection-less
- **Interaction Modality**  
= Synchronous or asynchronous
- **Communication Type**  
= freeform-stream (Byte based) or fully-structured blocks (Command-Response)
- **Communication Configuration**  
= Peer to Peer or Master-Slave
- **Message Form(s)**  
= Text( XML/Json/?), Binary(Protobuf/?)

**MENU**



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# GOLO Case Study

- **Connection less – REST interface**
- **Asynchronous\***
- **Command-Response**
- **Master-Slave**
- **JSON**



**MENU**



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# GOLO Technologies

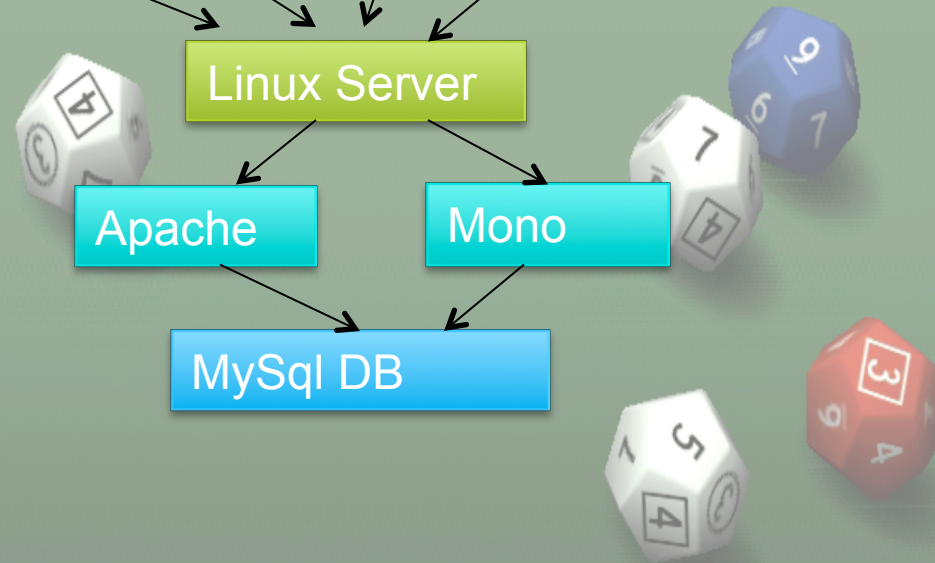
Unity Client  
Android

Unity Client  
iOS

Unity Client  
Web

Unity Client  
FB

- **Unity**
- **Linux Server**
- **Apache**
- **Mono**
- **MySQL**



**MENU**



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# GOLO Game Demo

Game Demo

<https://www.puap.com/playgolo>



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# Normalizing your data

<http://support.microsoft.com/kb/283878>

- Why is it important?
- What are the Benefits?



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# Normalizing your data

- Some cases are obvious some are not
- Caching data vs Calculating
- Joins and indices
- How do you keep GOLO game standings?

**MENU**



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# GOLO Game Standings

## Player 1 vs Player X as wins

ID	Opponent 1	Opponent 2	Opponent 3	Opponent 4	Opponent 5	...
1	4	0	7	0	3	
2...						
3...						
4						
5						
...						

## Player X vs Player Y (Normalized?)

<u>WinnerID</u>	<u>LoserID</u>	<u>Wins</u>	<u>Games</u>	<u>GBucks</u>
28	56	2242	2373	4006650
56	28	2025	2171	354877

MENU



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# Examples

**DB Examples**  
**Code Examples**



**MENU**



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# Some Terminology for Networked games

- **TCP/IP**
- **Sockets**
- **Json/XML/Protobuf/Binary**
- **Schemas**
- **Normalization**
- **SQL**
- **REST**

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# Questions?

**What's on your mind?**



**MENU**



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