

The Humanity of the Soar Quakebot

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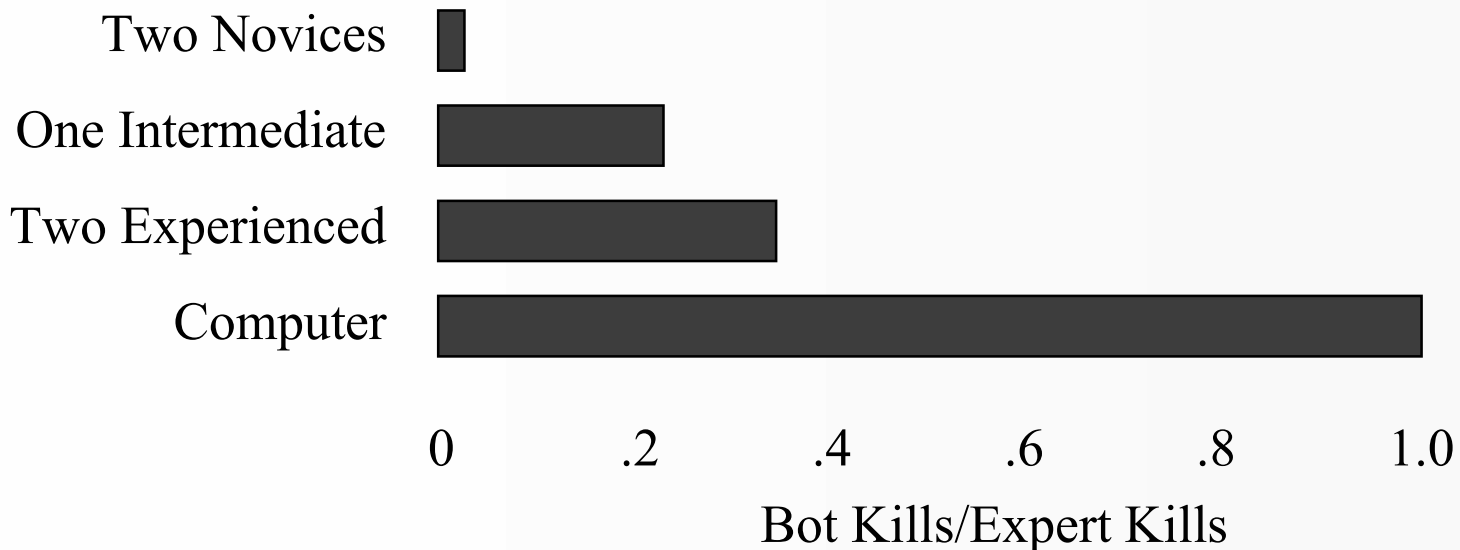
Upper Arlington High School

Soar Workshop XX

How Good Is It?

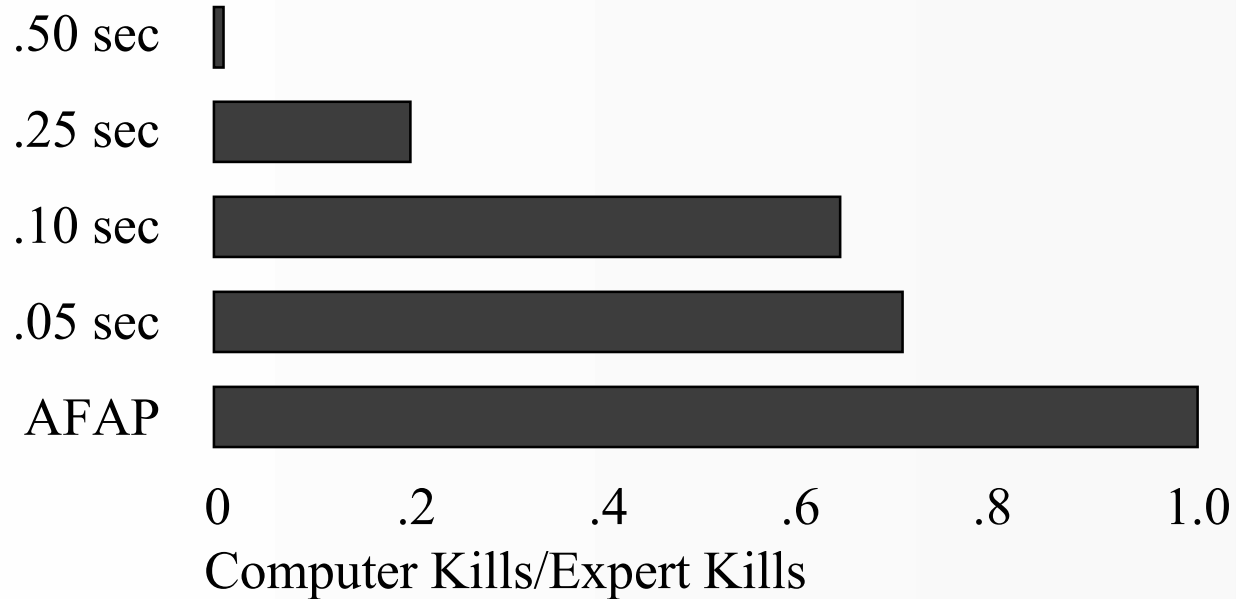
- Vs. Human expert (15 year-old Quake II player)
 - Human novice players 1/28
 - Human intermediate player 2/8
 - Human experienced players 7/19
 - Computer 28/29

Opponent vs. Expert



Variability: Reaction Time

Time/Soar Decision



Variability: Aiming Skill

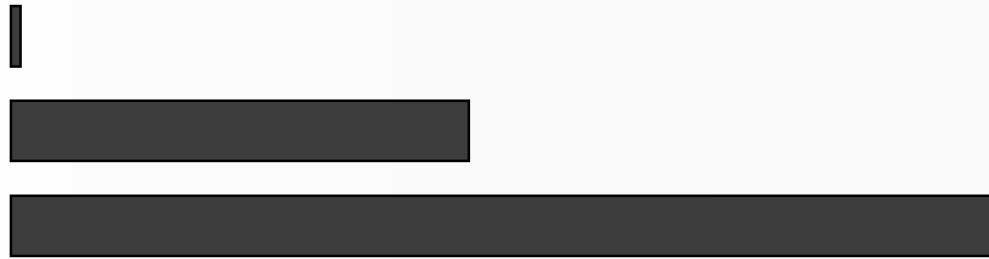
Aiming Skill

Rule/Operator Control

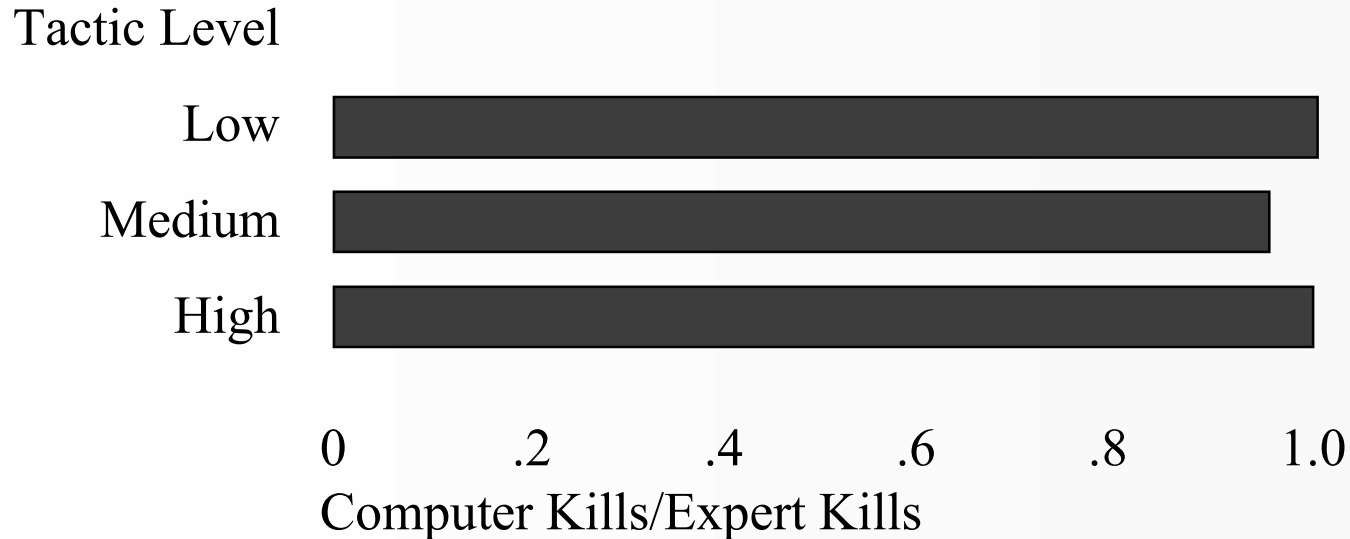
C Face target

C Lead target

0 .2 .4 .6 .8 1.0
Computer Kills/Expert Kills



Variability: Tactics



Low: No special tactics (still picks up good weapons)

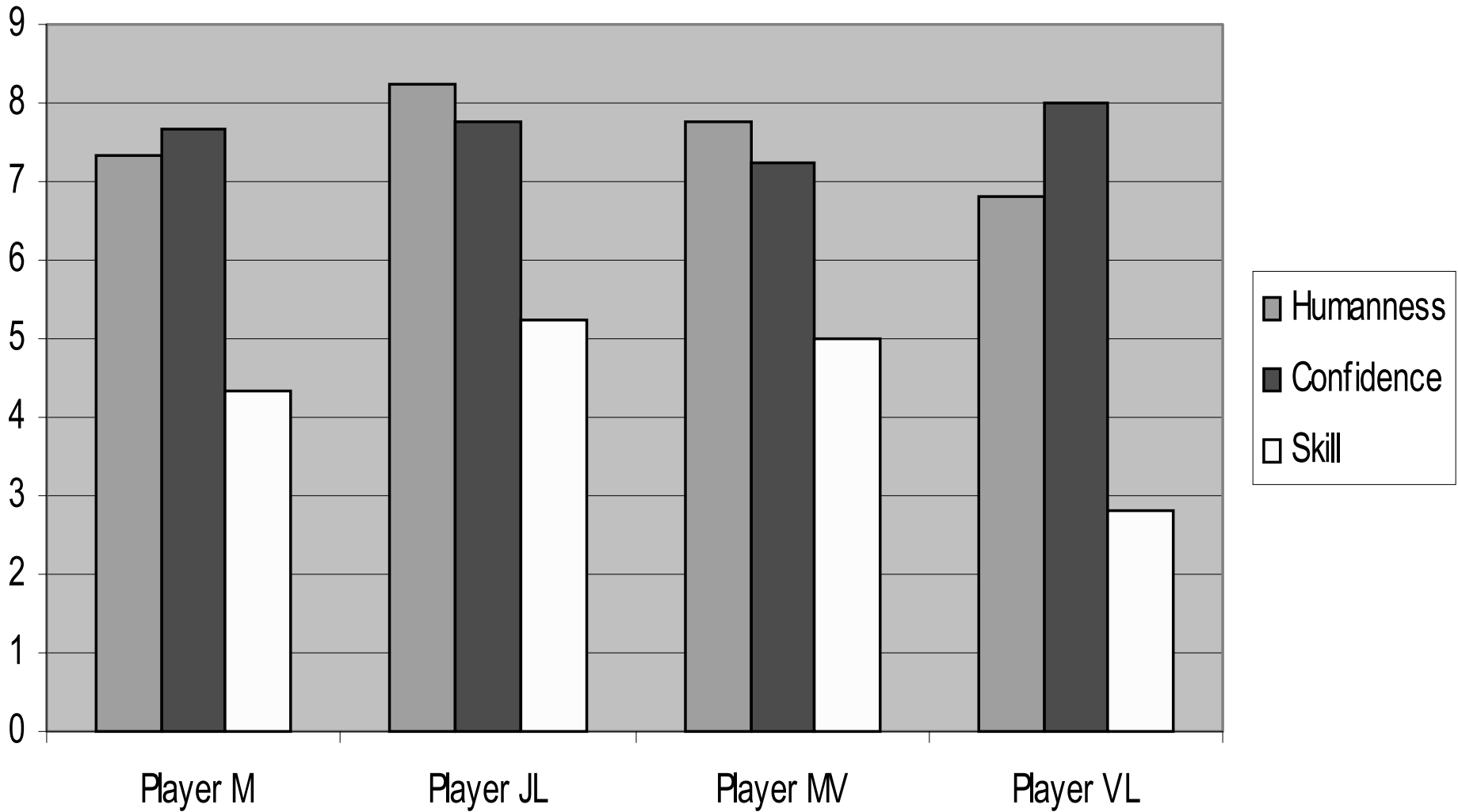
Medium: Only circle-strafe

High: All tactics (circle-strafe, hide, hunt, ...)

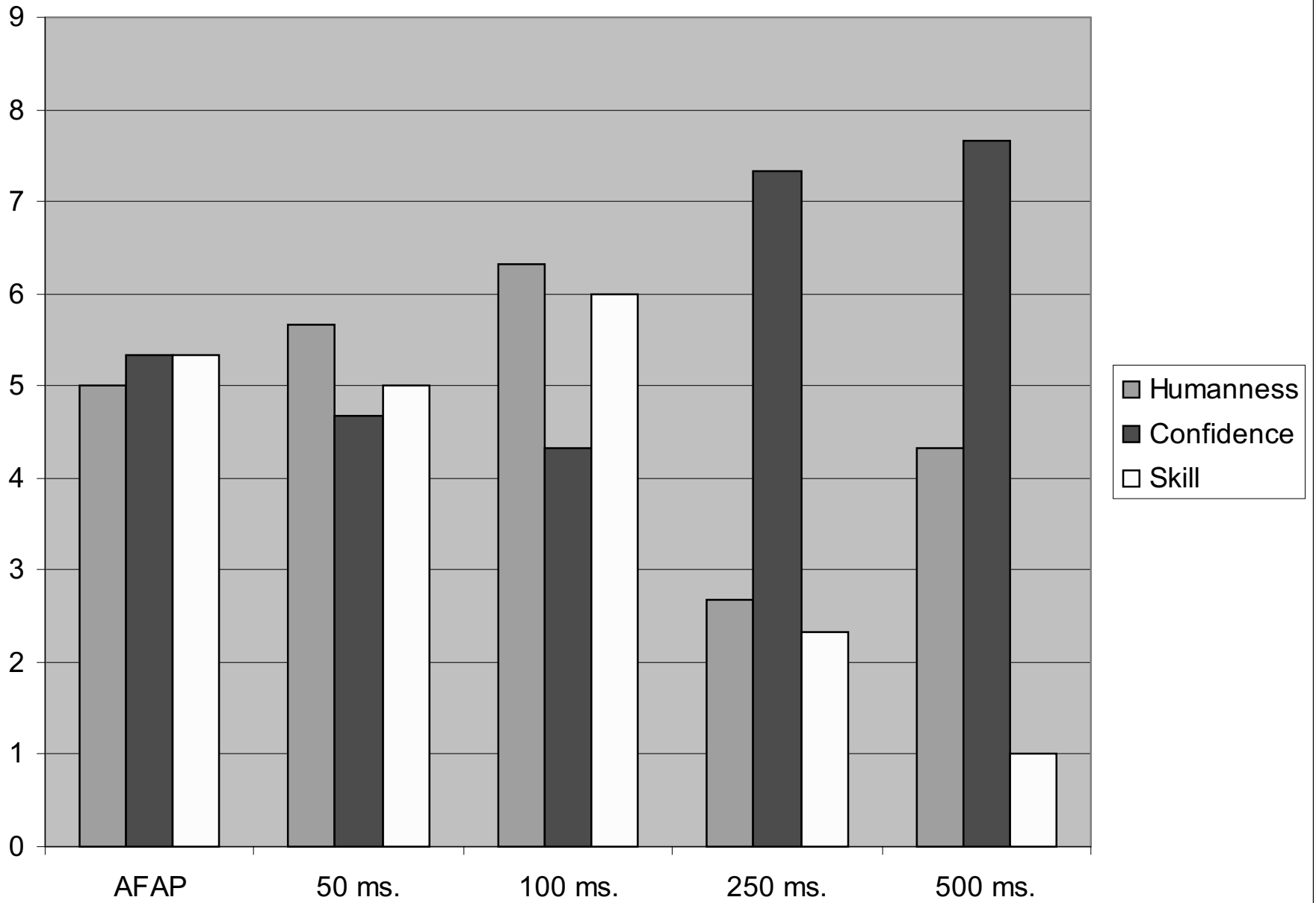
Adaptive Difficulty

- Automatically adjust Quakebot difficulty
 - Based on death quotient: human kills/bot kills
- Adjust aiming skill and reaction-time.
 - Initialize aiming-skill=face-target, reaction-time=100.
 - +/- 50 msec. reaction-time
 - Change aiming-skill when hit limits of reaction time
- Need more testing to determine if this is more fun

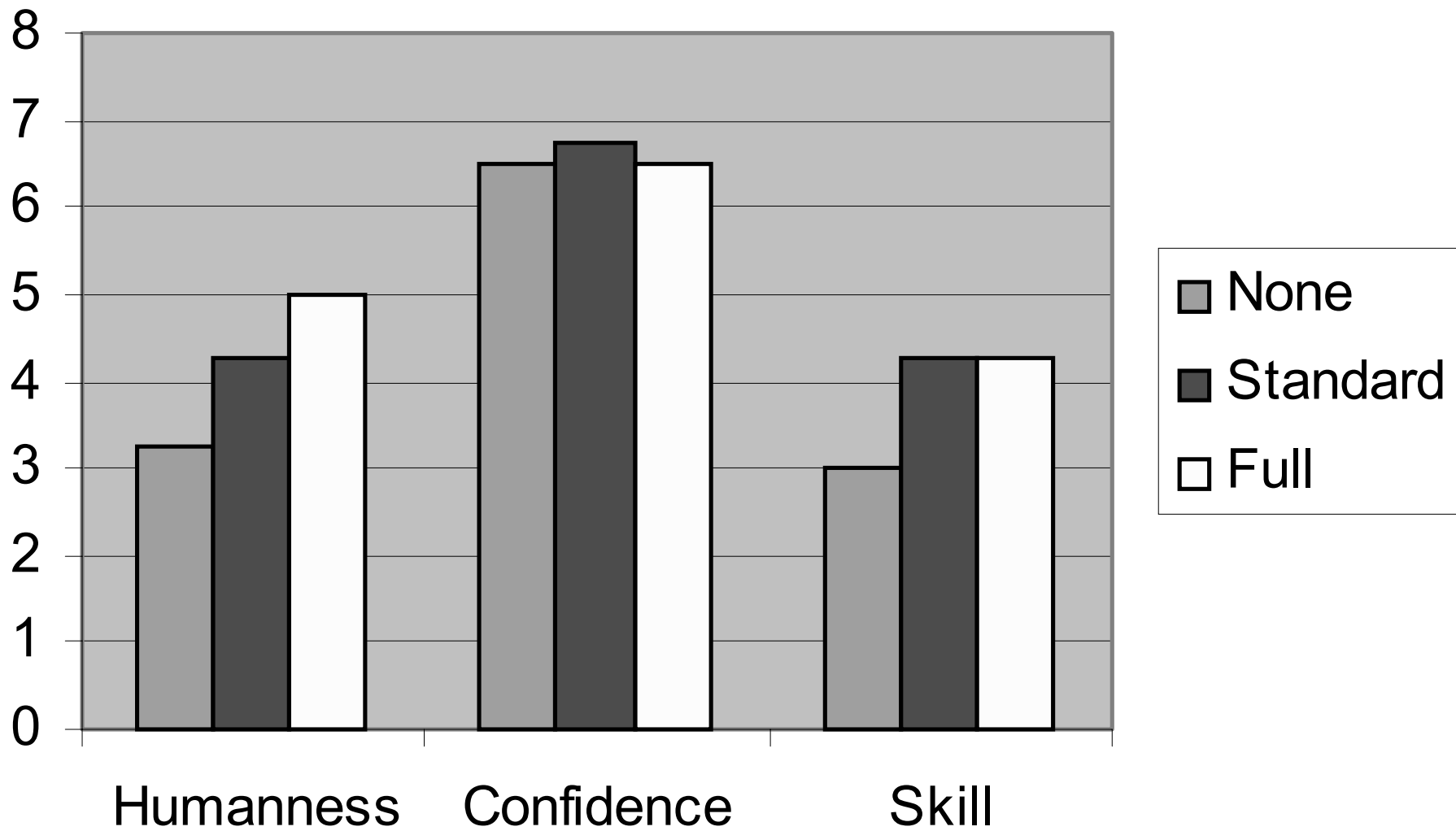
Humans



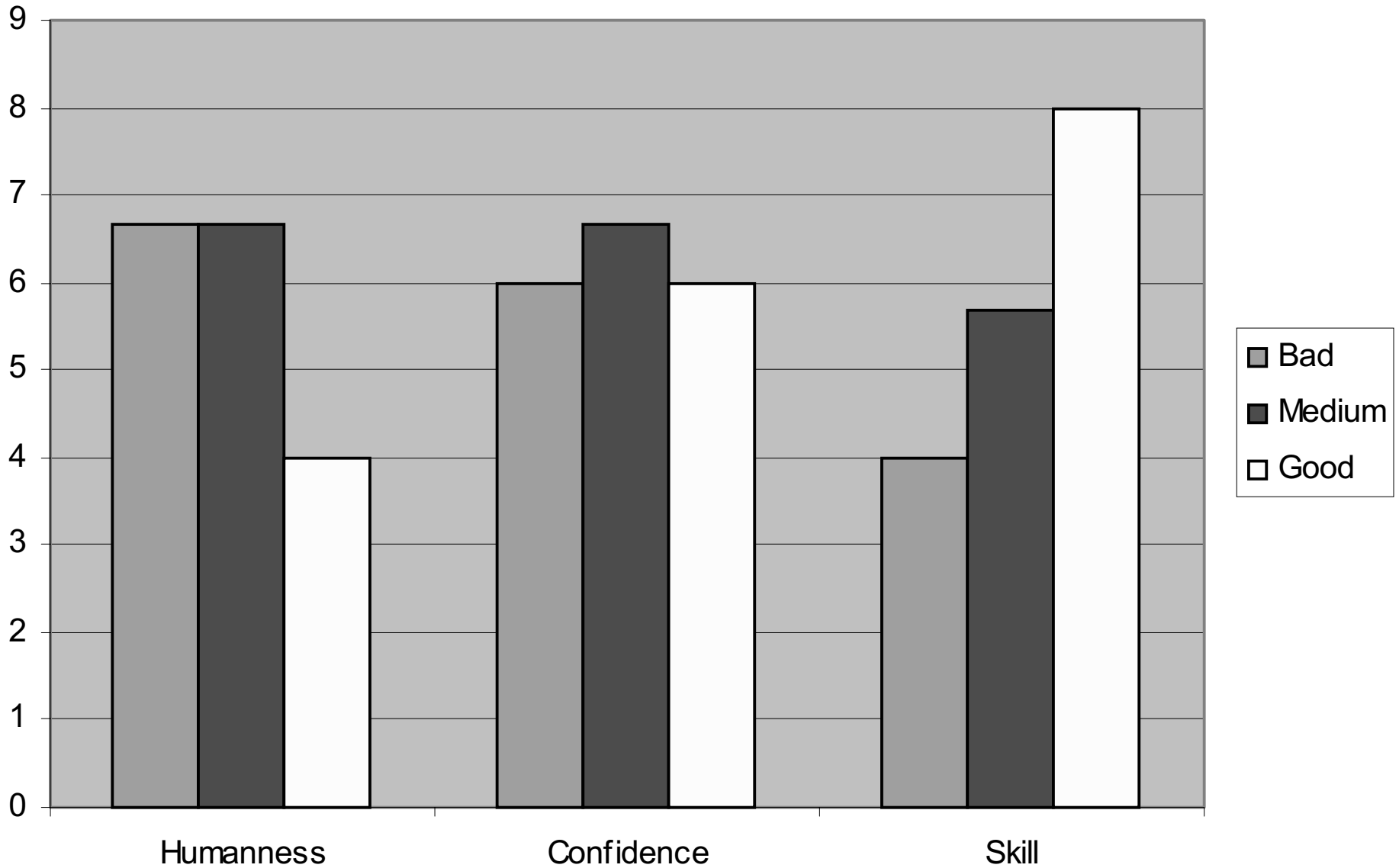
Reaction Time



Tactics



Aiming Skill



Coal and Nuggets

- Coal
 - Far from passing the Quake Turing Test
- Nuggets
 - Have reliable method for varying skill
 - Tested methodology for determining humanness
 - Skill and humanness aren't necessarily correlated
 - Got ideas for improving humanness of bot
 - More realistic aiming and shooting
 - Smoother turning