EENG580 Game 1: Visual Representation of Course Content

Activity summary

Overview: Word game similar to Pictionary; Win, Lose or Draw; Fast Draw; Draw Something; and iSketch.

Setting: In class, or any location with a whiteboard.

Curricular elements: gaming

Prerequisites: completion of a majority of the course

Topics/concepts covered: everything in the course to date

Learning outcomes: After completing this activity, students should be able to:

- Know the definitions of most of the major concepts covered in the course
- Depict/explain course concepts using sketches

Expected time to complete: one 1-hour class session

Required hardware/materials: A whiteboard, dry-erase markers, and a timer. The instructor should also print this handout on heavy card stock and use a paper cutter to separate the cards.

Required instructor interaction: The instructor serves as scorekeeper and moderator

Common mistakes/pitfalls: Some students forget the rules or don't pay attention to them. Students might miss the point of the activity if it is not reinforced; it is recommended to periodically encourage the students to prepare for this game throughout the course, so they spend time trying to understand each concept graphically rather than attempting to figure it out on the fly.

Method of assessment: Scored by instructor during game play. The winning team can be offered bonus points or non-grade-related perks.

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EENG580 Game 1: visual representation of course content

This is a word game similar to *Pictionary*; *Win, Lose or Draw*; *Fast Draw*; *Draw Something*; and *iSketch*.

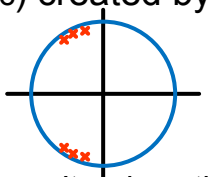
Rules

- Divide into two teams, A and B. The object of the game is for one person to draw on the whiteboard and get their teammates to guess as many words as possible, without speaking. Gesturing is acceptable, charades are not.
- Cards are worth 2 to 5 points, as noted on each card. You may pass a card, incurring a loss of 2 points. Rule violations count as passing.
- Most cards simply state the *guess word* in italics. A few give descriptions instead, and you have to figure out the intended word before drawing it.
- Words on the card in parentheses do not have to be guessed, they are just there for clarification. Other than that, the guessers must say the exact word or phrase on the card, though alternate tenses and swapping singular for plural are acceptable.
- There are two types of play, "timed" and "all play". During timed play, one team gets one minute to go through as many words as possible. During all play, both teams draw at once, and the first team to guess the word wins.
- If both teams agree, the time limit per turn may be extended to 1.25 or 1.5 minutes.
- During either type of play, one or both teams each send up a leader and a wingman. The leader must do all of the drawing. However, the leader can confer (quietly) with the wingman if he/she does not know the guess word or wants suggestions on drawing ideas.
- When drawing, words and most mathematical symbols are forbidden. The allowed symbols are:

  $+ - \pm \oplus \times \bullet * \otimes \odot \div / \geq \leq = \neq$

  $\rightarrow \Rightarrow \leftrightarrow \Leftrightarrow \measuredangle ( ) [ ] \#$

  All other Roman letters, Greek letters, and mathematics are forbidden. Plots and block diagrams are allowed.

	All Play		
Guess Phrase: The type of system that implements the equation below: $y[n] = \sum_{k=-\infty}^{n} x[k]$	Guess Phrase: *Aliasing*	Guess Phrase: *All Pass*	Guess Phrase: *Analog*
3 points	2 points	2 points	2 points
All Play			
Guess Phrase: Type of filter (LP, HP, etc) created by:  (you can't redraw this)	Guess Phrase: *Band Stop (Filter)*	Guess Phrase: *Bandwidth*	Guess Phrase: *Bartlett (Window)*
3 points	3 points	2 points	2 points
	All Play	All Play	
Guess Phrase: The "system property" where the output can't depend on future inputs	Guess Phrase: *Change Detection*	Guess Phrase: *Circular Convolution*	Guess Phrase: *Complex Exponential (or cisoid)*
2 points	4 points	2 points	3 points
Guess Phrase: *(Complex) Conjugate*	Guess Phrase: *Convolution*	Guess Phrase: *Digital*	Guess Phrase: *Discrete*
2 points	2 points	2 points	2 points

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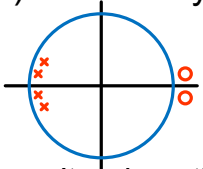
Guess Phrase: *Downsampling*	Guess Phrase: *Duality* Definition: if a[n]↔b(ω) then b[n]↔a(ω)	Guess Phrase: *Eigen-* *(function or vector)*	Guess Phrase: *Feedback*
2 points	5 points	5 points	2 points
Guess Phrase: *FFT*	Guess Phrase: *FIR (Filter)*	Guess Phrase: *Fourier*	Guess Phrase: *Frequency*
2 points	3 points	2 points	2 points
All Play	All Play	All Play	All Play
Guess Phrase: *Frequency Response*	Guess Phrase: Type of filter (LP, HP, etc) created by:  (you can't redraw this)	Guess Phrase: *IIR (Filter)*	Guess Phrase: *Image Registration*
2 points	3 points	3 points	3 points
Guess Phrase: *Imaginary*	Guess Phrase: *Impulse Response*	Guess Phrase: What you do to fill in the zeros after upsampling	Guess Phrase: The "system property" where adding inputs is the same as adding outputs
2 points	2 points	3 points	2 points

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		All Play	
Guess Phrase: *Linear Phase*	Guess Phrase: *Low Pass (Filter)*	Guess Phrase: The 3-letter acronym for the properties that let us characterize a system by its impulse response	Guess Phrase: *Magnitude*
4 points	2 points	4 points	2 points
Guess Phrase: The "system property" where outputs only depend on current inputs	Guess Phrase: Minimum Phase	Guess Phrase: *MAC* or *Multiply-and-Accumulate*	Guess Phrase: *Nyquist*
2 points	3 points	4 points	4 points
	All Play		
Guess Phrase: *Odd (Symmetry)*	Guess Phrase: *Parseval's (Theorem)*	Guess Phrase: *Periodic*	Guess Phrase: *Phase*
3 points	4 points	4 points	2 points
Guess Phrase: *Phase Delay*	Guess Phrase: *Reconstruction*	Guess Phrase: *Sampling*	Guess Phrase: The function that is the inverse DTFT of a rectangle
4 points	4 points	2 points	2 points

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	All Play		
Guess Phrase: *Spectrum*	Guess Phrase: The “system property” where any bounded input leads to a bounded output	Guess Phrase: *Time*	Guess Phrase: The “system property” where delaying the input is the same as delaying the output
3 points	2 points	2 points	2 points
All Play			
Guess Phrase: *Transform*	Guess Phrase: *Two-sided*	Guess Phrase: *Upsampling*	Guess Phrase: *Wiggle Factor*
2 points	3 points	2 points	2 points
Guess Phrase: *Matlab*	Guess Phrase: *Makerspace*	Guess Phrase: *Wireless*	Guess Phrase: *Image*
2 points	4 points	4 points	3 points
Guess Phrase: *Function*	Guess Phrase: *Memory*	Guess Phrase: *Textbook*	Guess Phrase: *Notch Filter*
3 points	3 points	2 points	3 points

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All Play	All Play	All Play	All Play
Guess Phrase:	Guess Phrase:	Guess Phrase:	Guess Phrase:
__ points	__ points	__ points	__ points
Guess Phrase:	Guess Phrase:	Guess Phrase:	Guess Phrase:
__ points	__ points	__ points	__ points
Guess Phrase:	Guess Phrase:	Guess Phrase:	Guess Phrase:
__ points	__ points	__ points	__ points
Guess Phrase:	Guess Phrase:	Guess Phrase:	Guess Phrase:
__ points	__ points	__ points	__ points

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All Play	All Play	All Play	All Play
Guess Phrase:	Guess Phrase:	Guess Phrase:	Guess Phrase:
__ points	__ points	__ points	__ points
Guess Phrase:	Guess Phrase:	Guess Phrase:	Guess Phrase:
__ points	__ points	__ points	__ points
Guess Phrase:	Guess Phrase:	Guess Phrase:	Guess Phrase:
__ points	__ points	__ points	__ points
Guess Phrase:	Guess Phrase:	Guess Phrase:	Guess Phrase:
__ points	__ points	__ points	__ points

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