Hearing on "Oversight of the U.S. Patent and Trademark Office
Representative Zoe Lofgren
Questions for the Record

The Honorable Andrei Iancu, Under Secretary of Commerce for Intellectual Property and Director of the United States and Trademark Office

- Theranos was granted nearly 100 patents based on an "invention" that did not work. How could the patent application for an invention that did not work either: (a) enable one skilled in the art to practice the invention; or (b) objectively demonstrate that the applicant actually invented what is claimed? How did this pass the 112 review process?
- What are the USPTO's plans to strengthen the 112 review for other art areas, particularly in life sciences?
- What percentage of time do examiners spend on 112 analysis?
- Software inventions are unique in that the invention itself is a written description that meets all section 112 requirements. Why doesn't the USPTO just require the invention's source code be disclosed to meet the enablement recruitment and--more importantly--prove the applicant actually invented what she is claiming?
- As part of your update to section 101 guidance, did you review the existing examiner training examples to see if they were still valid? If not, why not?
- A process that was identical (in all but the name of the protein) to the one found in example 29 of the patent examiners training materials (the Life Sciences Examples) was found unpatentable two years ago in *CLEVELAND CLINIC v. TRUE HEALTH DIAGNOSTICS.* And just last month the court found another patent on this same technique unpatentable in an unpublished decision, meaning that the courts didn't even bother publishing it because the decision

added nothing new. When will the USPTO remove this example from the examiner training materials?

- Is the USPTO going to review past examples to see if they have been found unpatentable as well?
- In the new examiner training examples, added as part of the new 101 guidance, example 39 deals with training a Neural Network for Facial Recognition. In that analysis the USPTO states that the claim

> *"does not recite any of the judicial exceptions … For instance, the claim does not recite any mathematical relationships, formulas, or calculations …the mathematical concepts are not recited in the claims."*

However, "mirroring[1], rotating[2] and smoothing[3]" are well defined mathematical operations, as well defined as addition or subtraction**.** The mathematical transformations are the only thing that makes this claimed invention more than just "train AI with pictures using standard techniques," which would be an abstract idea.

Does the USPTO agree that mirroring, rotating and smoothing are well known mathematical operations? If not, why not. If so, how does this claim not recite any mathematical relationships, formulas, or calculations?

Does a claim that simply adds the number 5 to the vertical

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[1] "An image of an object obtained by reflecting it in a mirror so that the signs of one of its coordinates are reversed." http://mathworld.wolfram.com/MirrorImage.html; "If the plane of reflection is taken as the yz-plane, the reflection in two- or three-dimensional space consists of making the transformation $x \to -x$ for each point." *See* http://mathworld.wolfram.com/Reflection.html

[2] "The turning of an object or coordinate system by an angle about a fixed point. A rotation is an orientation-preserving orthogonal transformation. … Rotations can be implemented using rotation matrices" *See* http://mathworld.wolfram.com/Rotation.html, and http://mathworld.wolfram.com/RotationMatrix.html; A rotation matrix is a matrix that is used to perform a rotation in Euclidean space. For example, the matrix $R_\theta = \begin{bmatrix} \cos\theta & -\sin\theta \\ \sin\theta & \cos\theta \end{bmatrix}$, rotates points in the xy-plane counterclockwise through an angle θ about the origin of a two-dimensional Cartesian coordinate system.

[3] GaussianFilter is a filter commonly used in image processing for smoothing… It is a convolution-based filter that uses a Gaussian matrix as its underlying kernel. Gaussian filtering is linear, meaning it replaces each pixel by a linear combination of its neighbors. https://reference.wolfram.com/language/ref/GaussianFilter.html;

coordinate of every pixel in an image[4] recite any mathematical relationships, formulas, or calculations?

[4] http://mathworld.wolfram.com/Translation.html