

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

DIGITAL GLOBAL SYSTEMS, INC.,
Petitioner,

v.

DEEPSIG INC.,
Patent Owner.

IPR2025-00049
Patent 10,581,469 B1

Before WILLIAM V. SAINDON, ROBERT J. WEINSCHENK, and
ANDREW L. NALVEN, *Administrative Patent Judges*.

WEINSCHENK, *Administrative Patent Judge*.

DECISION

Denying Petitioner's Request on Rehearing of
Decision Denying Institution of *Inter Partes* Review
37 C.F.R. § 42.71(d)

I. INTRODUCTION

Digital Global Systems, Inc. (“Petitioner”) filed a Request for Rehearing (Paper 8, “Rehearing Request” or “Req. Reh’g”) of the Decision Denying Institution of *Inter Partes* Review (Paper 7, “Decision” or “Dec.”) of claims 1–8, 10, 12–15, and 17–24 of U.S. Patent No. 10,581,469 B1 (Ex. 1001, “the ’469 patent”). For the reasons set forth below, the Request for Rehearing is *denied*.

II. ANALYSIS

When considering a request for rehearing of a decision whether to institute an *inter partes* review, the Board reviews its decision for an abuse of discretion. 37 C.F.R. § 42.71(c). The party requesting rehearing bears the burden of showing that the decision should be modified, and “[t]he request must specifically identify all matters the party believes the Board misapprehended or overlooked.” 37 C.F.R. § 42.71(d).

The Decision states that “claim 1 require[s] updating parameters for a *transmit* model based on a distance metric computed using a signal obtained from a *receiver*.” Dec. 7. Petitioner argues that we “erred by implicitly adding a ‘*transmit* model’ requirement to the . . . independent claims.” Req. Reh’g 2. Petitioner contends that “[t]he claim language confirms that . . . the [machine learning model] need not be a *transmit* model.” *Id.* at 4. According to Petitioner, “[t]he *transmit radio signal* processed by the [machine learning model] is a pre-output signal,” and “the claim language does not otherwise require that the [machine learning model] transmit it or any other signal.” *Id.* Petitioner also contends that “[t]he ’469 patent specification confirms that the claimed [machine learning model] need not be a *transmit* model.” *Id.* at 7. Specifically, Petitioner asserts that “the ’469

patent contemplates that its machine learning models, parameters, and training are not limited to a particular location or device (such as a transmitter)” because it “discloses a nonlinear pre-distortion system that can remotely ‘perform online tuning.’” *Id.* at 7–8 (citing Ex. 1001, 6:11–12, 6:26–28, 10:14–18, 10:19–20).

Petitioner’s argument is unavailing. The Rehearing Request states that the machine learning model in claim 1 “*processes* a transmit radio signal,” and “the pre-distorted signal generated by the [machine learning model] is ultimately processed into a *transmit **output** radio signal*.” *Id.* at 4–5. In other words, Petitioner acknowledges that the machine learning model in claim 1 processes a transmit radio signal before it is transmitted to a receiver. *Id.* This is consistent with our use of the phrase “transmit model” in the Decision. Specifically, we used the phrase “transmit model” to distinguish between a model that processes a signal before transmission and a model that processes a signal after reception. Dec. 12–13 (distinguishing between “an encoder (i.e., transmit) model” and “a decoder (i.e., receive) model”). We do not find any portion of the Decision that requires the machine learning model in claim 1 to actually transmit a signal. *See id.* at 5–14.

The Decision states that “the portions of Holt cited by Petitioner teach training an encoder (i.e., transmit) model based on a loss function computed using a signal obtained from a model, not from a receiver.” *Id.* at 12–13. Petitioner argues that we “ignore[d] Petitioner’s evidence that a [person of ordinary skill in the art] would have understood that Holt’s loss functions could be applied interchangeably for different model setups, including both

an emulated channel model and an actual communication channel.” Req. Reh’g 13–14 (citing Pet. 20; Ex. 1003 ¶ 128).

Petitioner’s argument is unavailing. The Decision did not overlook the evidence identified in the Rehearing Request. The cited evidence indicates that a person of ordinary skill in the art “would have understood that Holt’s encoder and decoder models were not limited to a channel model and could be implemented with an actual communication channel for loss functions.” Ex. 1003 ¶ 128. Even if Petitioner is correct that Holt generally teaches implementing an encoder model with an actual communication channel, that does not demonstrate how Holt trains the encoder model. *See id.* Specifically, Petitioner does not identify evidence indicating that Holt teaches training the encoder model based on a loss function computed using a signal received over an actual communication channel. *See* Req. Reh’g 9–15. Rather, as the Decision explains, Holt only teaches training the encoder model based on a loss function computed using a signal obtained from a model. Dec. 9–13.

The Decision states that “Petitioner does not assert specifically that a person of ordinary skill in the art would have modified Holt’s techniques to train a transmit model (such as Jüschke’s) using a signal obtained from a receiver.” *Id.* at 14. Petitioner argues that “[t]his finding was incorrect” because we “fail[ed] to acknowledge Petitioner’s assertions of evidence concerning a [person of ordinary skill in the art’s] motivation to combine Holt with Jüschke to train Jüschke’s transmit model.” Req. Reh’g 14–15 (citing Pet. 24, 43, 46; Ex. 1003 ¶¶ 135, 180, 187).

Petitioner’s argument is unavailing. The Decision acknowledges Petitioner’s evidence that “a person of ordinary skill in the art would have

had reason to combine the cited teachings of Jüschke and Holt,” but determines that “the proposed combination does not teach all the limitations of claim 1.” Dec. 13. In reaching that conclusion, the Decision did not overlook the evidence identified in the Rehearing Request. Specifically, the cited evidence indicates that the proposed combination involves implementing Holt’s loss function to train an encoder model in Jüschke’s transmitter and a decoder model in Jüschke’s receiver. Ex. 1003 ¶ 135 (“Holt’s ‘encoder model can be implemented by a transmitter device . . . while the decoder model can be implemented by a receiver device’”); *id.* ¶ 180 (“implement Holt’s loss functions with transmitters and receivers in Jüschke”); *id.* ¶ 187 (“combine Holt’s techniques for machine learning and training using transmitters (encoders) and receivers (decoders) with Jüschke”). The cited evidence does not propose any specific modifications to Holt’s training techniques. *Id.* ¶ 180 (“using Holt’s loss functions in lieu of or in addition to Jüschke’s transmission input/output feedback loop would have been a combination of known elements, methods, and techniques”); *see id.* ¶¶ 135, 187.

For the foregoing reasons, after considering Petitioner’s arguments in the Request for Rehearing, Petitioner does not show sufficiently that the Jüschke and Holt combination teaches or suggests updating the parameters for a transmit model (i.e., a machine learning model that processes a transmit signal before transmission) based on a distance metric computed using a signal obtained from a receiver.

III. CONCLUSION

The Request for Rehearing does not demonstrate that the Decision should be modified.

IV. ORDER

It is hereby

ORDERED that the Request for Rehearing is *denied*.

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For PETITIONER:

Brian Eutermoser
Chris Campbell
John Roehrick
KING & SPALDING LLP
beutermoser@kslaw.com
ccampbell@kslaw.com
jroehrick@kslaw.com

For PATENT OWNER:

Wayne M. Helge
James T. Wilson
BUNSOW DE MORY LLP
whelge@bdiplaw.com
jwilson@bdiplaw.com

Amit Singhal
ROSSI, KIMMS & MCDOWELL LLP
amitsinghal@rkmlp.com