Title (en)

THEORY-MOTIVATED DOMAIN CONTROL FOR OPHTHALMOLOGICAL MACHINE LEARNING-BASED PREDICTION METHOD

Title (de)

THEORIE-MOTIVIERTE DOMÄNENKONTROLLE FÜR OPHTHALMOLOGISCHE MACHINE-LEARNING-BASIERTE VORHERSAGEMETHODE

Title (fr)

COMMANDE DE DOMAINE MOTIVÉE PAR LA THÉORIE POUR UN PROCÉDÉ DE PRÉDICION BASÉ SUR UN APPRENTISSAGE AUTOMATIQUE OPHTALMOLOGIQUE

Publication

**EP 4285386 A1 20231206 (DE)**

Application

**EP 22708353 A 20220126**

Priority

- DE 102021102142 A 20210129
- EP 2022051779 W 20220126

Abstract (en)

[origin: WO2022162013A1] The invention relates to a computer-implemented method for determining the refractive power of an intraocular lens to be inserted. The method comprises providing a physical model for determining refractive power and training a machine learning system with clinical ophthalmological training data and associated desired results to form a learning model for determining the refractive power. A loss function for training two components comprises: a first component of the loss function takes into account clinical ophthalmological training data and associated and desired results and a second component of the loss function takes into account limitations of the physical model in that a loss function component value of this second component is greater the further a predicted value of the refractive power during the training is from results of the physical model with the same clinical ophthalmological training data as input values. Moreover, the method comprises providing ophthalmological data of a patient and predicting the refractive power of the intraocular lens to be used by means of the trained machine learning system, wherein the provided ophthalmological data are used as input data.

IPC 8 full level

**G16H 50/50** (2018.01); **A61F 2/16** (2006.01); **G16H 20/40** (2018.01); **G16H 50/70** (2018.01)

CPC (source: EP US)

**A61B 3/0025** (2013.01 - EP); **G06N 20/00** (2019.01 - US); **G16H 20/40** (2018.01 - EP); **G16H 50/20** (2018.01 - EP US); **G16H 50/70** (2018.01 - EP); A61F 2/16 (2013.01 - EP)

Designated contracting state (EPC)

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated extension state (EPC)

BA ME

Designated validation state (EPC)

KH MA MD TN

DOCDB simple family (publication)

**DE 102021102142 A1 20220804**; CN 117280425 A 20231222; EP 4285386 A1 20231206; JP 2024508379 A 20240227; US 2024120094 A1 20240411; WO 2022162013 A1 20220804

DOCDB simple family (application)

**DE 102021102142 A 20210129**; CN 202280012340 A 20220126; EP 2022051779 W 20220126; EP 22708353 A 20220126; JP 2023546052 A 20220126; US 202218263162 A 20220126