

**IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE**

RONDEVOO TECHNOLOGIES, LLC,

Plaintiff,

v.

DEEPRADIOLOGY CORPORATION,

Defendant.

Civil Action No.:

TRIAL BY JURY DEMANDED

COMPLAINT FOR INFRINGEMENT OF PATENT

Now comes, Plaintiff, Rondevoo Technologies, LLC (“Plaintiff” or “Rondevoo”), by and through undersigned counsel, and respectfully alleges, states, and prays as follows:

NATURE OF THE ACTION

1. This is an action for patent infringement under the Patent Laws of the United States, Title 35 United States Code (“U.S.C.”) to prevent and enjoin Defendant DeepRadiology Corporation (hereinafter “Defendant”), from infringing and profiting, in an illegal and unauthorized manner, and without authorization and/or consent from Plaintiff from U.S. Patent No. 7,088,854 (“the ‘854 Patent”), U.S. Patent No. 7,254,266 (“the ‘266 Patent”), and U.S. Patent No. 8,687,879 (“the ‘879 Patent”) (collectively the “Patents-in-suit”), which are attached hereto as Exhibit A, B, and C, respectively, and incorporated herein by reference, and pursuant to 35 U.S.C. §271, and to recover damages, attorney’s fees, and costs.

THE PARTIES

2. Plaintiff is a California limited liability company with its principal place of business at 35 Hugus Alley, Suite 210, Pasadena, California 91103.

3. Upon information and belief, Defendant is a corporation organized under the laws of Delaware, having one principal place of business at 2461 Santa Monica Blvd, Santa Monica, CA 90404. Upon information and belief, and according to the Delaware Secretary of State's website, Defendant may be served with process c/o its registered agent: Incorp Services, Inc, 1919 North Market Street, Suite 950, Wilmington, DE 19801.

JURISDICTION AND VENUE

4. This is an action for patent infringement in violation of the Patent Act of the United States, 35 U.S.C. §§ 1 *et seq.*

5. The Court has subject matter jurisdiction over this action pursuant to 28 U.S.C. §§ 1331 and 1338(a).

6. This Court has personal jurisdiction over Defendant by virtue of its systematic and continuous contacts with this jurisdiction and its residence in this District, as well as because of the injury to Plaintiff, and the cause of action Plaintiff has risen in this District, as alleged herein.

7. Defendant is subject to this Court's specific and general personal jurisdiction pursuant to its substantial business in this forum, including: (i) at least a portion of the infringements alleged herein; (ii) regularly doing or soliciting business, engaging in other persistent courses of conduct, and/or deriving substantial revenue from goods and services provided to individuals in this forum state and in this judicial District; and (iii) being incorporated in this District.

8. Venue is proper in this judicial district pursuant to 28 U.S.C. § 1400(b) because Defendant resides in this District under the Supreme Court's opinion in *TC Heartland v. Kraft*

Foods Group Brands LLC, 137 S. Ct. 1514 (2017) through its regular and established place of business in this District.

FACTUAL ALLEGATIONS

9. Inventors Carl Cotman, Charles Chubb, Yoshiyuki Inagaki, and Brian Cummings are pioneers in the field of medical imaging and analysis. A difficult problem facing these scientists, along with other medical researchers and diagnosticians around the world, was the visualization and aggregation of cell-level structure growth and the expression of associated cellular pathologies. The invention at issue here formed as a result of their seeking a solution to better understand the pathology of Alzheimer's disease and other diseases at the cellular level.

10. Patients suffering from Alzheimer's have microscopic growths in their brains called beta-amyloid deposit 'plaques' and twisted tau protein 'tangles.' In a simplified sense, these plaques and tangles can be thought of as physically similar to balls and strands of yarn respectively, although the comprising protein fragments are many times smaller in size than even microscopic neural cells. For Alzheimer's patients, these harmful plaques build up between neurons, while the tangles form twisted fibers that wrap themselves around inside neurons and prevent normal movement of cellular materials and organelles inside the neurons and their long processes. The result is the degeneration of neural activity and structure, although scientists are still trying to determine how (one theory is that plaques and tangles somehow disrupt communication between neurons, and thus their ability to propagate and survive). What is certain, is that plaque and tangle formation within neurons causes them to dysfunction and progressively degenerate.

11. To better understand how these plaque and tangle structures affect the creation and advancement of this horrible disease (*e.g.* Do more plaque and tangle proteins mean worse

symptoms?), scientists needed to be able to detect their presence in and among microscopic samples with numerical certainty. Traditionally, neuropathologists and/or experienced scientists analyzed brain tissue from suspected Alzheimer sufferers to determine the extent and type of pathology. Investigators sought to measure the quantifiable characteristics of a given pathology, correlate it with function, and then ultimately correlate with behavior.

12. Before the inventions claimed in the Patents-in-suit, scientists understood how plaques and tangles formed, but had no way to accurately count all of their fibrous bundles. Messrs. Cotman, Chubb, Inagaki, and Cummings invented the way to solve this problem. By leveraging technological advances in medical imaging and creating a unique software solution designed to specifically rely on these unique computerized medical imaging technologies, these four inventors created their novel and not obvious solution for plaque/tangle protein analysis and quantification. Specifically, they created a reproduceable automated system programmed to intelligently recognize chromatic differences in cellular images and evolve its detection algorithm to improve its own accuracy. The end result was a sophisticated imaging system relying on a uniquely designed software solution that could do something that no human could ever hope to achieve: find and count every single little fiber living in each plaque and tangle in a patient's brain. Their solution solved the Alzheimer field's long-unmet need to easily and accurately quantify the number of fibrous protein fragments in any given sample, thus opening the door to subsequent research into what it meant to have more or less plaques/tangles and more in particular locations and particular stages of the disease.

13. Their solution was quickly recognized as useful in a myriad other types of medical imaging studies outside of Alzheimer's research, including the field of radiological pathology. Even more broadly, their innovation allowed for imaging detection development and

research to grow outside of the medical field altogether, as many fields had a need for intelligent reproducible detection of subsets or samples within a given image (*e.g.* metallurgy, polymer development, etc.). The unique nature of the invention is that the imaging recognition algorithm increases the precision of chromatic imaging classification, because of the inventive system learns and thus, can approach each situation flexibly. The invention allows a dynamic partnership to evolve between the standard setting- user and evolving analytical system, with the result being an ever improving degree of accuracy and precision in imaging and analysis. This then opens the door to new pathological and technological relationships and how they function.

14. On August 8, 2006, the United States Patent and Trademark Office (“USPTO”) duly and legally issued the ‘854 Patent, entitled “Method and apparatus for generating special-purpose image analysis algorithms” after a full and fair examination. See Exhibit A.

15. Plaintiff is presently the owner of the ‘854 Patent, having received all right, title and interest in and to the ‘854 Patent from the previous assignee of record. Plaintiff possesses all rights of recovery under the ‘854 Patent, including the exclusive right to recover for past infringement.

16. The invention claimed in the ‘854 Patent comprises a computer program product for generating special-purpose image analysis algorithms.

17. Claim 1 of the ‘854 Patent states:

1. A computer program product for generating special-purpose image analysis algorithms comprising:
a computer usable medium having computer readable program code embodied therein, said computer readable program code configured to:
obtain at least one image having a plurality of chromatic data points;
generate an evolving algorithm that partitions said plurality of chromatic data points within said at least one image into at least one entity identified in accordance with a user's judgment; and

store a first instance of said evolving algorithm as a product algorithm wherein said product algorithm enables the automatic classification of instances of said at least one entity within at least one second image in accordance with said judgment of said user.

See Exhibit A.

18. Defendant commercializes, inter alia, a computer program product or methods that perform all the steps recited in at least one claim of the '854 Patent. More particularly, Defendant commercializes, inter alia, a computer program product or methods that perform all the steps recited in Claim 1 of the '854 Patent. Specifically, Defendant makes, uses (at least in internal testing), sells, offers for sale, or imports a computer program product or method that encompasses that which is covered by Claim 1 of the '854 Patent.

19. On August 7, 2007, the USPTO duly and legally issued the '266 Patent, entitled "Method and apparatus for generating special-purpose image analysis algorithms" after a full and fair examination. See Exhibit B.

20. Plaintiff is presently the owner of the '266 Patent, having received all right, title and interest in and to the '266 Patent from the previous assignee of record. Plaintiff possesses all rights of recovery under the '266 Patent, including the exclusive right to recover for past infringement.

21. The invention claimed in the '266 Patent comprises a method for automating the expert quantification of image data using a product algorithm.

22. Claim 1 of the '266 Patent states:

1. In a computer system, a method for automating the expert quantification of image data using a product algorithm comprising:
obtaining a product algorithm for analysis of a first set of image data wherein said product algorithm is configured to recognize at least one entity within said first set of image data via a training mode that

utilizes iterative input to an evolving algorithm obtained from at least one first user, wherein said training mode comprises:
presenting a first set of said at least one entity to said user for feedback as to the accuracy of said first set of identified entities;
obtaining said feedback from said user;
executing said evolving algorithm using said feedback;
presenting a second set of said at least one entity to said user for feedback as to the accuracy of said second set of identified entities;
obtaining approval from said user about said second set of entities; storing said evolving algorithm as a product algorithm;
providing said product algorithm to at least one second user so that said at least one second user can apply said product algorithm against a second set of image data having said at least one entity.

See Exhibit B.

23. Defendant commercializes, inter alia, a computer program product or methods that perform all the steps recited in at least one claim of the '266 Patent. More particularly, Defendant commercializes, inter alia, a computer program product or methods that perform all the steps recited in Claim 1 of the '266 Patent. Specifically, Defendant makes, uses (at least in internal testing), sells, offers for sale, or imports a computer program product or method that encompasses that which is covered by Claim 1 of the '266 Patent.

24. On April 1, 2014, the USPTO duly and legally issued the '879 Patent, entitled "Method and apparatus for generating special-purpose image analysis algorithms" after a full and fair examination. See Exhibit C.

25. Plaintiff is presently the owner of the '879 Patent, having received all right, title and interest in and to the '879 Patent from the previous assignee of record. Plaintiff possesses all rights of recovery under the '879 Patent, including the exclusive right to recover for past infringement.

26. The invention claimed in the '879 Patent comprises a non-transitory computer program product for automating the expert quantification of image data.

27. Claim 1 of the '879 Patent states:

1. A non-transitory computer program product for automating the expert quantification of image data comprising:
a computer-readable medium encoded with computer readable instructions executable by one or more computer processors to quantify image sets comprising a locked evolving algorithm, wherein said locked evolving algorithm is generated by:
obtaining a product algorithm for analysis of a first set of image data wherein said product algorithm is configured to recognize at least one entity within said first set of image data via a training mode that utilizes iterative input to an evolving algorithm obtained from at least one first user, wherein said training mode comprises:
presenting a first set of said at least one entity to said user for feedback as to the accuracy of said first set of identified entities;
obtaining said feedback from said user;
executing said evolving algorithm using said feedback;
presenting a second set of said at least one entity to said user for feedback as to the accuracy of said second set of identified entities;
obtaining approval from said user about said second set of entities; storing said evolving algorithm as a product algorithm; and
storing said product algorithm for subsequent usage on said image sets.

See Exhibit C.

28. Defendant commercializes, inter alia, a computer program product or methods that perform all the steps recited in at least one claim of the '879 Patent. More particularly, Defendant commercializes, inter alia, a computer program product or methods that perform all the steps recited in Claim 1 of the '879 Patent. Specifically, Defendant makes, uses (at least in internal testing), sells, offers for sale, or imports a computer program product or method that encompasses that which is covered by Claim 1 of the '879 Patent.

29. The '854 Patent, the '266 Patent, and the '879 Patent share a common specification.

30. The claimed inventions within the Patents-in-Suit represent significant improvements in the art of imaging and image analytics, and are not mere routine or conventional uses of computer components. Further, the inventions disclosed in the Patents-In-Suit are not merely methods of achieving results in ways that are broadly practicable by individuals unbound by the constraints of the claimed elements. No human being could accomplish the claimed methodologies independent of claim limitations. The inventions are not merely "do-it-on-a-computer" claims, and do not merely rely on generic computerized components to prompt an action, as each method requires the implementation of a developing and evolving computerized algorithm that improves the end goal of imaging detection and quantification. As explained above, the Patents-In-Suit solve long-unmet needs by improving upon specific technologies related thereto.

31. The inventions relate to the field of computer software or hardware. More specifically, the inventions relate to generating special-purpose imaging analysis algorithms based on the detection and classification of imaging data. See Ex. A. '854 Patent 1: 20-24

32. The inventions claimed in the Patents-in-Suit were not well-understood, routine, or conventional at the time of filing. It was not well-understood, routine, or conventional to be able to repeatably and accurately identify microscopic protein structures, or some other type of identifiable protein strand portion having characteristics necessary or desirable for detection. The detected structures located within a given image may have different shapes, colors, or textures, but would still belong to the same classification needed for counting, and thus the inventions would be able to accommodate and eventually account for such variances as part of

its inherent inventive function. Alternatively, detected structures comprising a similar color/texture may be classified as one type while entities comprising a different color/texture may be classified as another type, while still all being counted as part of the initial analytical framework. *See Ex. A, '854 Patent, Abstract.* Additionally, the novel inventions described in the Patents-in-Suit address unsolved problems in the art by quantifying image data according to set of changing criteria and derive one or more classifications for entities in image. The inventions provide a way for determining what kind of entities are in image and counts total number of entities visually identified in image, while information utilized during an analytical run or even a starter “learning” training run may be recognized and applied across different images. *See Ex. A, '854 Patent, Abstract.*

33. The inventions taught in the Patents-in-Suit provide a need for an improved technology that aids the process of obtaining quantitative data from images such as scientific samples. Such a technology provides scientists and other users with important insights into the progression of many different diseases, the identification of distinguishing features among diseases, and the detection of previously-unrecognizable features of other small-scale imaging data. *See Aatrix Software, Inc. v. Green Shades Software, Inc.*, 882 F.3d 1121 (Fed. Cir. 2018); *Cellspin Soft, Inc. v. Fitbit Inc.*, 927 F.3d 1306 (Fed. Cir. 2019); *Koninklijke KPN N.V. v. Gemalto M2M GmbH*, 2019 BL 439585 (Fed. Cir. 2019); *Ironworks Patents, LLC v. Apple Inc.*, Case No. 17-cv-1399-RGA, 2018 WL 2944475 (D. Del., June 12, 2018).

34. The claimed programs and associated methods cannot be performed with merely a pen and paper, or abstractly in the human mind. One of ordinary skill in the art at the time of the patent would have understood that the inventions could not be performed with pen and paper. Using a pen and paper would ignore the stated purpose of the Patents-In-Suit, and the problems

they were specifically designed to address. Doing so would also be a practical impossibility running counter to the inventor's detailed description of the inventions and language of the claims in the Patents-In-Suit.

35. The weight of the asserted claims in each of the Patents-in-suit are directed to non-abstract improvements in the underlying functionality of computer-assisted chromatic imaging analysis. *See generally* Exhs. A, B, C.

36. The asserted claims of the Patents-in-suit require the unique inclusion and arrangement of claim elements that specifically improve the quantitative detection of analytes in multi-dimensional images in light of dynamically-changing detection criteria. *See generally* Exs. A, B, C.

37. The asserted claims do not merely recite an 'abstract idea' for which generic computers or generic computer components are invoked merely as a tool to accomplish something achievable in the abstract. *See Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1334-36 (Fed. Cir. 2016).

38. Thus, the claims of the Patents-in-suit asserted herein all recite patent-eligible subject matter under 35 U.S.C. § 101, as new and useful processes, machines, and/or improvements thereof.

DEFENDANT'S PRODUCT(S)

39. Defendant offers solutions, such as the "Deep Radiology Imaging Technology" (the "Accused System"), that enables image analysis based on product algorithms.

40. A non-limiting and exemplary claim chart comparing the Accused System to Claim 1 of the '854 Patent is attached hereto as Exhibit D and is incorporated herein.

41. As recited in Claim 1 of the '854 Patent, a system, at least in internal testing and usage, utilized by the Accused System uses, practices, or is a computer program product for generating special-purpose image analysis algorithms. See Exhibit D.

42. As recited in one portion of Claim 1 of the '854 Patent, the system at least in internal testing and usage, utilized by the Accused System uses, practices, or is a computer usable medium having computer readable program code embodied therein. See Exhibit D.

43. As recited in another portion of Claim 1 of the '854 Patent, the system, at least in internal testing and usage, utilized by the Accused System uses, practices, or is a computer program product obtaining an image having plurality of chromatic data points. See Exhibit D.

44. As recited in another portion of Claim 1 of the '854 Patent, the system, at least in internal testing and usage, utilized by the Accused System uses, practices, or is computer readable program code configured to: generate an evolving algorithm that partitions said plurality of chromatic data points within one image into an entity identified in accordance with a user's judgement. See Exhibit D.

45. As recited in another portion of Claim 1 of the '854 Patent, the system, at least in internal testing and usage, utilized by the Accused System uses, practices, or is computer readable program code configured to: store a first instance of said evolving algorithm as a product algorithm wherein said product algorithm enables the automatic classification of instances of said at least one entity within at least one second image in accordance with said user. See Exhibit D.

46. A non-limiting and exemplary claim chart comparing the Accused System to Claim 1 of the '266 Patent is attached hereto as Exhibit E and is incorporated herein as if fully rewritten.

47. As recited in Claim 1 of the '266 Patent, a system, at least in internal testing and usage, utilized by the Accused System uses, practices, or is a method for a computer program product automating the expert quantification of image data using a product algorithm. See Exhibit E.

48. As recited in one portion of Claim 1 of the '266 Patent, the system, at least in internal testing and usage, utilized by the Accused System uses, practices, or is a step of obtaining a product algorithm for analysis of a first set of image data wherein said product algorithm is configured to recognize at least one entity within said first set of image data via a training mode that utilizes iterative input to an evolving algorithm obtained from at least one first user. See Exhibit E.

49. As recited in another portion of Claim 1 of the '266 Patent, the system, at least in internal testing and usage, utilized by the Accused System uses, practices, or method for a computer program product automating the expert quantification of image data using a product algorithm comprising: presenting a first set of said at least one entity to said user for feedback as to the accuracy of said first set of identified entities. See Exhibit E.

50. As recited in another portion of Claim 1 of the '266 Patent, the system, at least in internal testing and usage, utilized by the Accused System uses, practices, or method for a computer program product automating the expert quantification of image data using a product algorithm comprising: obtaining said feedback from said user. See Exhibit E.

51. As recited in another portion of Claim 1 of the '266 Patent, the system, at least in internal testing and usage, utilized by the Accused System uses, practices, or is method for a computer program product automating the expert quantification of image data using a product algorithm comprising: executing said evolving algorithm using said feedback. See Exhibit E.

52. As recited in another portion of Claim 1 of the '266 Patent, the system, at least in internal testing and usage, utilized by the Accused System uses, practices, or is method for a computer program product automating the expert quantification of image data using a product algorithm comprising: obtaining approval from said user about second set of entities; storing said evolving algorithm as a product algorithm. See Exhibit E.

53. As recited in another portion of Claim 1 of the '266 Patent, the system, at least in internal testing and usage, utilized by the Accused System uses, practices, or is method for a computer program product automating the expert quantification of image data using a product algorithm comprising: providing said algorithm to at least one second user said at least one second user can apply said product algorithm against a second set of image data having said at least one entity. See Exhibit E.

54. A non-limiting and exemplary claim chart comparing the Accused System to Claim 1 of the '879 Patent is attached hereto as Exhibit F and is incorporated herein as if fully rewritten.

55. As recited in Claim 1 of the '879 Patent, a system, at least in internal testing and usage, utilized by the Accused System uses, practices, or is a non-transitory computer program product for automating expert quantification of image data. See Exhibit F.

56. As recited in one portion of Claim 1 of the '879 Patent, the system, at least in internal testing and usage, utilized by the Accused System uses, practices, or is a non-transitory computer program product for automating the expert quantification of image data. See Exhibit F.

57. As recited in another portion of Claim 1 of the '879 Patent, the system at least in internal testing and usage by the Accused System uses a computer-readable medium encoded with computer readable instructions executable by one or more computer processes to quantify

image sets comprising a locked evolving algorithm, wherein said locked evolving algorithm is generated. See Exhibit F.

58. As recited in another portion of Claim 1 of the '879 Patent, the system, at least in internal testing and usage, utilized by the Accused System uses, practices, or is a step obtaining a product algorithm for analysis of a first set of image data wherein said product algorithm is configured to recognize at least one entity within said first set of image data via a training mode that utilizes iterative input to an evolving algorithm obtained from at least one first user. See Exhibit F.

59. As recited in another portion of Claim 1 of the '879 Patent, the system, at least in internal testing and usage, utilized by the Accused System uses, practices, or is a step of the training mode comprising: presenting a first set of said at least one entity to said user for feedback as to the accuracy of said first set of identified entities. See Exhibit F.

60. As recited in another portion of Claim 1 of the '879 Patent, the system, at least in internal testing and usage, utilized by the Accused System uses, practices, or is a step of the training mode comprising: obtaining said feedback from said user. See Exhibit F.

61. As recited in another portion of Claim 1 of the '879 Patent, the system, at least in internal testing and usage, utilized by the Accused System uses, practices, or is a step of the training mode comprising: executing said evolving algorithm using said feedback. See Exhibit F.

62. As recited in another portion of Claim 1 of the '879 Patent, the system, at least in internal testing and usage, utilized by the Accused System uses, practices, or is a step of the training mode comprising: presenting a second set of said at least one entity to said user for feedback as to the accuracy of said second set of identified entities. See Exhibit F.

63. As recited in another portion of Claim 1 of the '879 Patent, the system, at least in internal testing and usage, utilized by the Accused System uses, practices, or is a step of the training mode comprising: obtaining approval from said user about said second set of entities; storing said evolving algorithm as a product algorithm. See Exhibit F.

64. As recited in another portion of Claim 1 of the '879 Patent, the system, at least in internal testing and usage, utilized by the Accused System uses, practices, or is a step of the training mode comprising: storing said product algorithm for subsequent usage on said image sets. See Exhibit F.

INFRINGEMENT OF THE PATENTS

65. Plaintiff realleges and incorporates by reference all of the allegations set forth in the preceding paragraphs.

66. In violation of 35 U.S.C. § 271, Defendant is now, and has been directly infringing the '854 Patent, the '266 Patent, and the '879 Patent.

67. Defendant has had knowledge of infringement of the '854 Patent, the '266 Patent, and the '879 Patent at least as of the service of the present Complaint.

68. Defendant has directly infringed and continues to directly infringe at least one claim of the '854 Patent, the '266 Patent, and the '879 Patent by using, at least through internal testing or otherwise, the Accused System without authority in the United States, and will continue to do so unless enjoined by this Court.

69. As a direct and proximate result of Defendant's direct infringement of the '854 Patent, the '266 Patent, and the '879 Patent, Plaintiff has been and continues to be damaged.

70. By engaging in the conduct described herein, Defendant has injured Plaintiff and is thus liable for infringement of the '854 Patent, the '266 Patent, and the '879 Patent, pursuant to 35 U.S.C. § 271.

71. Defendant has committed these acts of infringement without license or authorization.

72. As a result of Defendant's infringement of the '854 Patent, the '266 Patent, and the '879 Patent, Plaintiff is entitled to a monetary judgment in an amount adequate to compensate for Defendant's past infringement, together with interests and costs, and no less than a reasonable royalty.

DEMAND FOR JURY TRIAL

73. Plaintiff demands a trial by jury of any and all causes of action.

PRAAYER FOR RELIEF

WHEREFORE, Plaintiff prays for the following relief:

a. That Defendant be adjudged to have infringed the '854 Patent, the '266 Patent, and the '879 Patent either literally or under the doctrine of equivalents;

b. An accounting of all infringing sales and damages including, but not limited to, those sales and damages not presented at trial;

c. An award of damages pursuant to 35 U.S.C. § 284 sufficient to compensate Plaintiff for the Defendant's past infringement and any continuing or future infringement through the enforceable term of the Patents-In-Suit;

d. An assessment of pre-judgment and post-judgment interest and costs against Defendant, together with an award of such interest and costs, in accordance with 35 U.S.C. §284; and

e. That Plaintiff be granted such other and further relief as this Court may deem just and proper.

Dated: April 29, 2020

Respectfully submitted,

/s/Jimmy Chong

Jimmy Chong
2291 Centerville Rd.
Suite 350
Wilmington, DE 19808
Tel: 302-999-9480

Todd Brandt (*Pro Hac Vice* Pending)
Brandt Law Firm
222 N. Fredonia Street
Longview, Texas 75601
Tel: 903 753 6760

Counsel for Plaintiff
Rondevoo Technologies, LLC