

## 引用文献

- 阿部重夫 (1995a) ニューラルネットの概要, 「ニューラルネットとファジィシステム — 理論と応用 一」, 近代科学社, 東京. 1-7.
- 阿部重夫 (1995b) 多層ニューラルネット, 「ニューラルネットとファジィシステム — 理論と応用 一」, 近代科学社, 東京. 47-93.
- 阿部重夫 (1995c) その他のニューラルネット, 「ニューラルネットとファジィシステム — 理論と応用 一」, 近代科学社, 東京. 95-128.
- Ambuel, J., S. Ninomiya and N. Takahashi (1997) Fuzzy logic evaluation of soybean plant shape. *Breeding Science* 47: 253-257.
- Andreasen, C., M. Rudemo and S. Sevestre (1997) Assessment of weed density at an early stage by use of image processing. *Weed Research* 37: 5-18.
- 曹其新・永田雅輝・御手洗正文・藤木徳実・木下統 (1996) マシンビジョンによる果菜の等級判定に関する研究 (第 2 報) — 構築したソフトウェアによるイチゴの形状判定試験 一. *植物工場学会誌* 8: 228-236.
- 曹其新・永田雅輝 (1997) マシンビジョンによる果菜の等級判定に関する研究 (第 3 報) — 階層型ニューラルネットワークによるピーマンの形状判定 一. *植物工場学会誌* 9: 49-59.
- Carneiro, L. C. and M. B. Lima (1987) Ampelographic characterization of grapevine varieties using leaf shape. *Ciencia e Tecnica Vitivinicola* 6: 67-78.
- Chen, C., Y. P. Chiang and Y. Pomeranz (1989) Image analysis and characterization of cereal grains with a laser range finder and camera contour extractor. *Cereal Chemistry* 66: 466-470.
- Cheng, H., G. K. Criner and A. S. Kezis (1996) The impact of consumer characteristics on preferences for selected apple varieties. *Journal of Food Products Marketing* 3 (4): 1-11.
- Cho, Y., Y. J. Han, W. E. Lambert and C. K. Bragg (1997) Characterizing convolutions in cotton fiber and their effects on fiber strength. *Transactions of the American Society of Agricultural Engineers* 40: 479-483.
- Chtiou, Y., D. Bertrand, Y. Dattee and M. F. Devaux (1996) Identification of seeds by colour imaging: Comparison of discriminant analysis and artificial neural network.

- Journal of the Science of Food and Agriculture 71: 433-441.
- Critten, D. L. (1996) Fourier based techniques for the identification of plants and weeds. Journal of Agricultural Engineering Research 64: 149-154.
- Davenport, E. (1907) Selection. In "Principles of breeding", Ginn and Company, Boston, MA, USA, 577-598.
- Davis, P. F. (1991) Orientation-independent recognition of chrysanthemum nodes by an artificial neural network. Computers and Electronics in Agriculture 5: 305-314.
- Dayhoff, J. (1992) 「ニューラルネットアーキテクチャ入門」桂井浩訳, 森北出版, 東京. pp.258.
- Dickinson, T. A., W. H. Parker and R. E. Strauss (1987) Another approach to leaf shape comparisons. Journal of the International Association for Plant Taxonomy 36: 1-20.
- Ding, K. and S. Gunasekaran (1994) Shape feature extraction and classification of food material using computer vision. Transactions of the American Society of Agricultural Engineers 37: 1537-1545.
- Dytch, H. E. and G. L. Wied (1990) Artificial neural networks and their use in quantitative pathology. Analytical and Quantitative Cytology and Histology 12: 379-393.
- Franz, E., M. R. Gebhardt and K. B. Unklesbay (1991a) Shape description of completely visible and partially occluded leaves for identifying plants in digital images. Transactions of the American Society of Agricultural Engineers 34: 673-681.
- Franz, E., M. R. Gebhardt and K. B. Unklesbay (1991b) The use of local spectral properties of leaves as an aid for identifying weed seedlings in digital images. Transactions of the American Society of Agricultural Engineers 34: 682-687.
- Fujita, H., T. Katafuchi, T. Uehara and T. Nishimura (1992) Application of artificial neural network to computer-aided diagnosis of coronary artery disease in myocardial SPECT bull's-eye images. The Journal of Nuclear Medicine 33: 272-276.
- 福沢邦之・早田文隆 (1994) 画像処理による青果物選別の現状. 食品流通技術 23 (11) : 12-19.
- Furuta, N., S. Ninomiya, N. Takahashi, H. Ohmori and Y. Ukai (1995) Quantitative evaluation of soybean (*Glycine max* L. Merr.) leaflet shape by principal component scores based on elliptic Fourier descriptor. Breeding Science 45: 315-320.
- Gerber, D. T. and D. H. Les (1994) Comparison of leaf morphology among submersed species of *Myriophyllum* (Haloragaceae) from different habitats and geographical

- distribution. *American Journal of Botany* 81: 973-979.
- Ghazanfari, A., J. Irudayaraj and A. Kusalik (1996) Grading pistachio nuts using a neural network approach. *Transactions of the American Society of Agricultural Engineers* 39: 2319-2324.
- Guyer, D. E., G. E. Miles, L. D. Gaultney and M. M. Schreiber (1993) Application of machine vision to shape analysis in leaf and plant identification. *Transactions of the American Society of Agricultural Engineers* 36: 163-171.
- Hadipoentyanti, E., M. Niwa, N. Furuta and S. Ninomiya (1996) Discrimination between Indonesian clove (*Syzygium aromaticum* (L.) Merr. & Perr.) populations by elliptic Fourier descriptors of leaf shape. *SABRAO Journal* 28 (2): 25-34.
- 浜本義彦 (1994) パターン認識理論の最近の動向. 電子情報通信学会誌 77 : 853-864.
- 橋本鋼二 (1980) 品種と草型, 「大豆の生態と栽培技術」 斎藤正隆・大久保隆弘編著, 農山漁村文化協会, 東京. 51-54.
- Heinemann, P. H., R. Hughes, C. T. Morrow, H. J. Sommer III, R. B. Beelman and P. J. Wuest (1994) Grading of mushrooms using a machine vision system. *Transactions of the American Society of Agricultural Engineers* 37: 1671-1677.
- Hertz, J., A. Krogh and R. Plamer (1991a) Extensions of the Hopfield model. In "Introduction to the theory of neural computation", Addison-Wesley Publishing Company, Redwood, CA, USA, 43-69.
- Hertz, J., A. Krogh and R. Plamer (1991b) Simple perceptrons. In "Introduction to the theory of neural computation", Addison-Wesley Publishing Company, Redwood, CA, USA, 89-114.
- Hopfield, J. J. and D. W. Tank (1985) "Neural" computation of decisions in optimization problems. *Biological Cybernetics* 52: 141-152.
- Humphries, S. and W. Simonton (1993) Identification of plant parts using color and geometric image data. *Transactions of the American Society of Agricultural Engineers* 36: 1493-1500.
- 池田善郎・斎藤義行 (1993) ニューラルネットワークによる農産物の形状判定. 農業機械学会誌 55 (3) : 59-64.
- Im, C., H. Nishida and T. L. Kunii (1998) Recognizing plant species by leaf shapes - A case

- study of the Acer family. Proceedings of 14th IEEE International Conference on Pattern Recognition 2: 1171-1173.
- Ingrouille, M. J. and S. M. Laird (1986) A quantitative approach to oak variability in some north London woodlands. The London Naturalist 65: 35-46.
- Jensen, N. F. (1988) Visual selection. In "Plant breeding methodology", John Wiley & Sons, New York, NY, USA, 331-354.
- Jensen, R. J. (1990) Detecting shape variation in oak leaf morphology: A comparison of rotational-fit methods. American Journal of Botany 77: 1279-1293.
- 甲斐和広・近藤直・林孝洋・芝野保徳・小西国義・門田充司 (1995a) スプレーギクの花房フォーメーションの評価アルゴリズムに関する研究(第1報) — 着花位置を決定する特徴量の抽出 —. 生物環境調節 33 : 253-259.
- 甲斐和広・近藤直・林孝洋・芝野保徳・小西国義・門田充司 (1995b) スプレーギクの花房フォーメーションの評価アルゴリズムに関する研究(第2報) — 画像処理を用いた評価指標の検討 —. 生物環境調節 33 : 261-267.
- 北浦健生・野村研・本沢安治・真子正史・二宮正士 (1997) 楕円フーリエ記述子のカラシナ葉形評価への応用. 育種学雑誌 47 (別2) : 297.
- 小島睦男 (1987) 草型との関係、「わが国におけるマメ類の育種」, 明文書房, 東京, 276-278.
- 国分牧衛 (1988) 大豆の多収草型モデルの設計と検証. 農業技術 43 : 193-197.
- Kuhl, F. P. and C. R. Giardina (1982) Elliptic Fourier features of a closed contour. Computer Graphics and Image Processing 18: 236-258.
- Liao, K., M. R. Paulsen, J. F. Reid, B. C. Ni and E. P. Bonifacio-Maghirang (1993) Corn kernel breakage classification by machine vision using a neural network classifier. Transactions of the American Society of Agricultural Engineers 36: 1949-1953.
- Liao, K., M. R. Paulsen and J. F. Reid (1994) Real-time detection of colour and surface defects of maize kernels using machine vision. Journal of Agricultural Engineering Research 59: 263-271.
- 松田郁生・森嶋博・瀬尾康久・芋生憲司 (1991) キュウリの画像処理選別に関する研究 — 画像サンプリングの誤差について —. 農業機械学会誌 54 (3) : 93-96.
- 松尾孝樹 (1978) 緒論, 「改訂増補 育種学」, 養賢堂, 東京, 1-45.
- McLellan, T. (1990) Development of differences in leaf shape in *Begonia dregei*

(Begoniaceae). American Journal of Botany 77: 323-337.

南峰夫・松島克典・氏原暉男 (1991) 画像解析による普通ソバの草姿の評価. 信州大学農学部紀要 28 : 165-173.

Molvray, M. and P. J. Kores (1995) Character analysis of the seed coat in Spiranthoideae and Orchidoideae, with special reference to the Diurideae (Orchidaceae). American Journal of Botany 82: 1443-1454.

村井正之・木下俊郎・広瀬昌平 (1987) イネの草型に関するダイアレル分析. 日本大学農獸医学部 学術研究報告 44 : 112-122.

永田雅輝・古池寿夫・岡田芳一・御手洗正文・石川勝美 (1989) スイートコーン種子のパターン化 による目皿セルの形状決定. 宮崎大学農学部研究報告 36 : 329-337.

永田雅輝・曹其新・御手洗正文・藤木徳実・木下統 (1996) マシンビジョンによる果菜の等級判定 に関する研究 (第1報) — 階層型ニューラルネットワークによる形状判定のソフトウェアと選別システム —. 植物工場学会誌 8 : 219-227.

Ni, B., M. R. Paulsen and J. F. Reid (1997) Corn kernel crown shape identification using image processing. Transactions of the American Society of Agricultural Engineers 40: 833-838.

Ninomiya, S. and I. Shigemori (1991) Quantitative evaluation of soybean (*Glycine max* L. MERRILL) plant shape by image analysis. Japanese Journal of Breeding 41: 485-497.

Ninomiya, S., J. Ambuel, S. Morinaga and N. Takahashi (1994) Comparison of three models to evaluate soybean plant shape using shape indices given by image analysis: Statistical discriminant function, neural network, and fuzzy logic. Proceedings of the 7th International Congress of SABRAO and International Symposium of WSAA: 613-620.

二宮正士・高橋信夫・大森宏・高野泰・鶴飼保雄・生出真里 (1994) 楕円フーリエ解析によるダイズ  $F_1$  葉形評価とダイアレル分析. 育種学雑誌 44 (別2) : 210.

二宮正士・生出真里・高橋信夫 (1998) ファジィ論理によるダイズ草姿・葉形データ検索システム. 日本作物学会紀事 67 : 104-108.

小川英光 (1994) パターン認識・理解の諸問題. 電子情報通信学会誌 76 : 615-631.

Ohsawa, R., T. Tsutsumi, H. Uehara, H. Namai and S. Ninomiya (1998) Quantitative evaluation of common buckwheat (*Fagopyrum esculentum* Moench) kernel shape by

- elliptic Fourier descriptor. *Euphytica* 101: 175-183.
- 生出真里・森永慎介・二宮正士 (1996) ダイズ草姿判別におけるニューラルネットワークモデル — 教師データ選択法の検討 —. *システム農学* 12(1) : 13-20.
- Oide, M. and S. Ninomiya (1998) Evaluation of soybean plant shape by multilayer perceptron with direct image input. *Breeding Science* 48: 257-262.
- Oide, M. and S. Ninomiya (2000a) Plant shape discrimination of several taxa without shape feature extraction by neural networks with image input. *Breeding Science* 50: 189-196.
- Oide, M. and S. Ninomiya (2000b) Discrimination of soybean leaflet shape by neural networks with direct image input. *Computers and Electronics in Agriculture* 29: 59-72.
- 生出真里・二宮正士 (2000) 画像入力をもつ線形ニューラルネットワークによるダイズ草姿判別モデル. *農業情報研究* 9 : 91-102.
- Oka, M. and K. Hinata (1988) An application of computer image analysis for characterization of plant type in rice cultivars. *Japanese Journal of Breeding* 38: 449-458.
- Oka, M. and K. Hinata (1989) Comparison of plant type between new and old rice cultivars using computer image analysis. *Japanese Journal of Crop Science* 58: 232-239.
- Panigrahi, S., M. K. Misra and S. Willson (1998) Evaluations of fractal geometry and invariant moments for shape classification of corn germplasm. *Computers and Electronics in Agriculture* 20: 1-20.
- Peterson, G. C., A. E. B. Ali, G. L. Teetes, J. W. Jones and K. Schaefer (1989) Grain sorghum resistance to midge by yield loss vs. visual scores. *Crop Science* 29: 1136-1140.
- Ram, B., B. S. Chaudhary and S. Singh (1998) Efficiency of visual selection methods in seedling populations of sugarcane. *Indian Journal of Agricultural Sciences* 68: 33-35.
- Ray, T. S. (1992) Landmark eigenshape analysis: Homologous contours; Leaf shape in *Syngonium* (Araceae). *American Journal of Botany* 79: 69-76.
- Rigney, M. P. and G. H. Brusewitz (1993) Milling effects on mustard seed shape. *Transactions of the American Society of Agricultural Engineers* 36: 1835-1839.

- Rumelhart, D. E., G. E. Hinton and R. J. Williams (1986) Learning representations by back-propagating errors. *Nature* 323: 533-536.
- Salmon, D. F. and E. N. Larter (1978) Visual selection as a method for improving yield of triticale. *Crop Science* 18: 427-430.
- Sarle, W. S. ed. (1997) Part 3: Generalization. In "Neural network FAQ", periodic posting to the Usenet newsgroup comp.ai.neural-nets, URL: <ftp://ftp.sas.com/pub/neural/FAQ.html>.
- 佐藤敦・山田敬嗣 (1999) ニューラルネットによるパターン認識(IV) — 学習ベクトル量子化と RBF モデル —. 電子情報通信学会誌 82 : 1248-1255.
- 佐藤敦・山田敬嗣 (2000) ニューラルネットによるパターン認識(V・完) — 新しいニューラルネットモデル —. 電子情報通信学会誌 83 : 50-56.
- Sawada, S. (1992) Time of determination and variations within and between plants in leaf shape of soybean. *Japanese Journal of Crop Science* 61: 96-100.
- Schaufler, D. H. and P. N. Walker (1995) Micropropagated sugarcane shoot identification using machine vision. *Transactions of the American Society of Agricultural Engineers* 38: 1919-1925.
- Shibata, Y., K. Nishizaki, Y. Yokochi, S. Fujii, A. Karaushi and K. Araki (1998) Crop recognition system for physical weeding robot. *Proceedings of 13th International Congress on Agricultural Engineering*: 453-459.
- Singh, N. and M. J. Delwiche (1994) Machine vision methods for defect sorting stonefruit. *Transactions of the American Society of Agricultural Engineers* 37: 1989-1997.
- Smith, M. (1993) "Neural networks for statistical modeling", International Thomson Computer Press, Boston, MA, USA, pp. 235.
- Steinmertz, V., M. J. Delwiche, D. K. Giles and R. Evans (1994) Sorting cut roses with machine vision. *Transactions of the American Society of Agricultural Engineers* 37: 1347-1353.
- Stuthman, D. D. and R. P. Steidl (1976) Observed gain from visual selection for yield in diverse oat populations. *Crop Science* 16: 262-264.
- 高木幹雄・下田陽久(編) (1991) 形状特徴, 「画像解析ハンドブック」, 東京大学出版会, 東京 . 578-582.
- Takeuchi, R., H. Kojima and K. Toyoda (1992) Morphological measurement of barley seed

- by computer vision system - Measurement of changes in seed shape during germination. *Science Reports of Faculty of Agriculture - Kobe University* 20: 115-121.
- 田中正武・坂本寧男・中川原捷洋 (1989) 遺伝資源の探索・収集, 「植物遺伝資源集成第1巻」松尾孝嶺監修, 講談社サイエンティフィク, 東京. 1-37.
- Travis, A. J. and S. R. Draper (1985) A computer based system for the recognition of seed shape. *Seed Science and Technology* 13: 813-820.
- Travis, A. J., D. J. Hirst and A. Chesson (1996) Automatic classification of plant cells according to tissue type using anatomical features obtained by the distance transform. *Annals of Botany* 78: 325-331.
- 角田重三郎・中川宣興 (1974) 草型, 「育種ハンドブック」育種ハンドブック編集委員会編, 養賢堂, 東京. 607-613.
- Ud-Din, N., B. F. Carver and E. G. Krenzer, Jr. (1993) Visual selection for forage yield in winter wheat. *Crop Science* 33: 41-45.
- 上坂吉則 (1994a) ニューロンの数学的モデル, 「ニューロコンピューティングの数学的基礎」, 近代科学社, 東京. 1-20.
- 上坂吉則 (1994b) 学習認識機械, 「ニューロコンピューティングの数学的基礎」, 近代科学社, 東京. 21-66.
- Warren, D. E. (1997) Image analysis research at NIAB: Chrysanthemum leaf shape. *Plant Varieties and Seeds* 10: 59-61.
- Woebbecke, D. M., G. E. Meyer, K. Von Bargen and D. A. Mortensen (1995a) Color indices for weed identification under various soil, residue, and lighting conditions. *Transactions of the American Society of Agricultural Engineers* 38: 259-269.
- Woebbecke, D. M., G. E. Meyer, K. Von Bargen and D. A. Mortensen (1995b) Shape features for identifying young weeds using image analysis. *Transactions of the American Society of Agricultural Engineers* 38: 271-281.
- Wu, H. (1994) Allometrical growth of the quantitative characters of plants 1. Measurement of leaf size and shape. *Botanical Bulletin of Academia Sinsica* 35: 115-124.
- 山田敬嗣 (1999a) ニューラルネットによるパターン認識 [I] — 基本的な考え方と応用例 —. 電子情報通信学会誌 82 : 852-859.

- 山田敬嗣 (1999b) ニューラルネットによるパターン認識 (II) — 統計的パターン分類 —. 電子情報通信学会誌 82 : 977-984.
- 山田敬嗣 (1999c) ニューラルネットによるパターン認識 (III) — 多層パーセプトロンモデル —. 電子情報通信学会誌 82 : 1046-1053.
- 山口裕文 (1982) カラスムギ生態型の草型のクラスター分析. 雜草研究 27 : 77-82.
- Yang, Q. (1993) Classification of apple surface features using machine vision and neural networks. Computers and Electronics in Agriculture 9:1-12.
- Yonekawa, S., N. Sakai and O. Kitani (1996) Identification of idealized leaf types using simple dimensionless shape factors by image analysis. Transactions of the American Society of Agricultural Engineers 39: 1525-1533.
- Yoshida, M., S. Ninomiya, M. Oide, M. Hagiwara, A. Ujihara and T. Matano (1995) Geographical variation of kernel shape on Tartary buckwheat from the world. Current Advances in Buckwheat Research: 397-404.
- Zayas, I., Y. Pomeranz and F. S. Lai (1989) Discrimination of wheat and nonwheat components in grain samples by image analysis. Cereal Chemistry 66: 233-237.
- Zayas, I. Y., C. R. Martin, J. L. Steele and A. Katsevich (1996) Wheat classification using image analysis and crush-force parameters. Transactions of the American Society of Agricultural Engineers 39: 2199-2204.
- Zhang, N. and C. Chaisattapagon (1995) Effective criteria for weed identification in wheat fields using machine vision. Transactions of the American Society of Agricultural Engineers 38: 965-974.
- Zhang, J., S. Sokhansanj, S. Wu, R. Fang and W. Yang (1997) A trainable grading system for tobacco leaves. Computers and Electronics in Agriculture 16: 231-244.