(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
2 December 2004 (02.12.2004)

PCT

(10) International Publication Number
WO 2004/104856 A1

(51) International Patent Classification[7]: G06F 17/18, 19/00 // 159:00

(21) International Application Number: PCT/AU2004/000696

(22) International Filing Date: 26 May 2004 (26.05.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
2003902589 26 May 2003 (26.05.2003) AU

(71) Applicant *(for all designated States except US)*: **COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANISATION** [AU/AU]; Limestone Avenue, Campbell, Australian Capital Territory 2612 (AU).

(72) Inventors; and

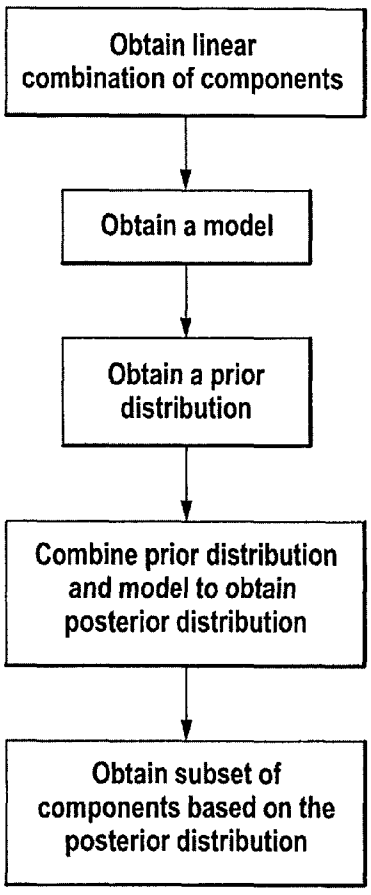
(75) Inventors/Applicants *(for US only)*: **KIIVERI, Harri** [AU/AU]; c/o- Commonwealth Scientific And Industrial Research Organisation, Limestone Avenue, Campbell, Australian Capital Territory 2612 (AU). **TRAJSTMAN, Albert** [AU/AU]; c/o- Commonwealth Scientific And Industrial Research Organisation, Limestone Avenue, Campbell, Australian Capital Territory 2612 (AU).

(74) Agent: **GRIFFITH HACK**; GPO Box 4164, Sydney, New South Wales 2001 (AU).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,

[Continued on next page]

(54) Title: A METHOD FOR IDENTIFYING A SUBSET OF COMPONENTS OF A SYSTEM



(57) Abstract: A method of identifying a subset of components of a system based on data obtained from the system using at least one training sample from the system, the method comprising the steps of: obtaining a linear combination of components of the system and weightings of the linear combination of components, the weightings having values based on data obtained from the at least one training sample, the at least one training sample having a known feature; obtaining a model of a probability distribution of the known feature, wherein the model is conditional on the linear combination of components; obtaining a prior distribution for the weighting of the linear combination of the components, the prior distribution comprising a hyperprior having a high probability density close to zero, the hyperprior being such that it is not a Jeffreys hyperprior; combining the prior distribution and the model to generate a posterior distribution; and identifying the subset of components based on a set of the weightings that maximise the posterior distribution.

WO 2004/104856 A1

TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) **Designated States** *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— *with international search report*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.