



(51) International Patent Classification:
G06T 15/00 (2011.01) **G06T 17/20** (2006.01)

(21) International Application Number:
PCT/CA2011/000374

(22) International Filing Date:
7 April 2011 (07.04.2011)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
61/322,950 12 April 2010 (12.04.2010) US

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(81) Designated States (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,
AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ,
CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO,
DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT,
HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP,
KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD,
ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI,
NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD,
SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR,
TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every
kind of regional protection available): ARIPO (BW, GH,
GM, KE, LR, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG,
ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ,
TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK,
EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU,
LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK,
SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ,
GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report (Art. 21(3))
- before the expiration of the time limit for amending the
claims and to be republished in the event of receipt of
amendments (Rule 48.2(h))

(54) Title: CAMERA PROJECTION MESHES

(57) Abstract: A 3D rendering method is proposed to increase the performance when projecting and compositing multiple images or video sequences from real-world cameras on top of a precise 3D model of the real world. Unlike previous methods that relied on shadow- mapping and that were limited in performance due to the need to re-render the complex scene multiple times per frame, the proposed method uses, for each camera, one Camera Projection Mesh ("CPM") of fixed and limited complexity per camera. The CPM that surrounds each camera is effectively molded over the surrounding 3D world surfaces or areas visible from the video camera. Rendering and compositing of the CPMs may be entirely performed on the Graphic Processing Unit ("GPU") using custom shaders for optimal performance. The method also enables improved view- shed analysis and fast visualization of the coverage of multiple cameras.

