

the visual3d documentation]]. ****data collection****: visual3d will let you use your motion capture system more effectively because the analysis techniques will lead you to optimal marker locations and definitions. see: [[visual3d:overview:visual3d_philosophy|the visual3d philosophy]] ****modelling****: motion capture data is just a big collection of signal inputs (usually in c3d file format). it has to be applied to a biomechanical model of a subject for it to make sense, and for analysis to be possible. see: [[visual3d:tutorials:modeling:building_a_model#key_concepts|key concepts]] and [[visual3d:documentation:modeling:modeling_overview|the overview]] and [[visual3d:documentation:kinematics_and_kinetics:pose_estimation|pose estimation]] and [[visual3d:tutorials:reports:visualizing_data_#associating_movement_trials_and_model|mapping motion to models]] ****analysis****: visual3d includes the math libraries needed to determine joint angles, powers, moments, forces, velocities, accelerations, custom pose estimations, filtering, signal processing, and much more. [[visual3d:references|citations]] exist for all the routines and approaches - there are no proprietary calculations in visual3d so that methodologies can be supported. create [[visual3d:documentation:pipeline:expressions:overview|custom math expressions]] and automate your analysis via the [[visual3d:documentation:pipeline:pipeline_overview|pipeline tool]] for total control. ****reporting****: visual3d has a full graphing and reporting tool built in. data can also be exported, and future versions support the opendoc format to integrate with ms word or openoffice. in addition to [[visual3d:documentation:visual3d_documentation_overview|the visual3d documentation]] see: [[visual3d:tutorials:reports:creating_a_report|the report creation tutorial]]. \\ ****releases****: [[visual3d:overview:visual3d_release_notes|visual3d version release notes - click here.]] \\ ****visual3d hardware requirements****: visual3d runs on windows vista and above (vista/win7/win8/win10). it has no specific minimal hardware requirements. it runs on 32 and 64 bit systems. but naturally, more powerful and advanced hardware is best. we recommend a 64-bit processor and having a minimum 4gb or more of memory (more is better). visual3d also runs on a mac under parallels or vmware (or dual boot to windows with bootcamp). sorry, there is no ipad, mac, or linux version. \\ ****here is a small list of some of the features that visual3d provides****: * comprehensive research platform * motion capture hardware-independent solution, with real-time interfaces for many systems * supports synchronized analog data (force plates, emg, eeg, load cells, gyros, mems, etc.) * force structures for instrumented stairs, treadmills, ramps, and multi-force plate configurations * data management for models, movement trials, and indexing * automation support via pipeline (scripting, meta-commands, and script controller) * template support for models and reports with template appending capabilities * scientific literature citations for all internal calculations * imports data from c3d, ascii, and older mocap formats * export .mot files to opensim for forward modeling * results stored as single data file with original and processed signals, model, and reports * free viewer available for download that allows anyone to view (not edit) the data file advanced modeling * automatic model building for markerless systems * advanced modeling with no marker set limitations and support for classical gait and 6dof * allows for custom, customer-defined marker sets * graphical approach for creating models * unlimited kinematic chains allow child to parent segments of 1 to 6 degrees of freedom joints * virtual markers (landmarks), segments, and labs to simplify, improve, and enhance analysis * digitizing pointer support for creating virtual markers * functional joint center calculations * linked-model based calculations for joint angles, powers, moments, etc. * virtual labs and vrml backgrounds supported signal processing and analysis * kinematics and inverse dynamics (kinetics) * real-time analysis and biofeedback functionality * inverse kinematics/global optimization (upper body ik * complex signal processing, filtering, and c3d import/export (includes export to polygon) * custom metrics, mathematical expressions and calculations (and integrates with matlab) * synchronized video support * induced acceleration and induced power analysis integrated reporting * integrated report generator * historical audit trail tracking of all changes to raw data * exporting graphs and reports in various formats (.jpg, .bmp, .avi, .svg, .png, etc.) * consolidated reporting of similar/tagged data * support for normative data collection across subjects

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