



File - apply\_fca  
(student27') > ('intelligent robots', 'hybrid network', 'cognitive knowledge bases', 'xi;data visualization', 'up/down counter', 'stability', 'quality assessment', 'character recognition', 'neurite networks', 'big data industry', 'humanoid robots', 'analog computation', 'parasitic capacitance', 'facebook data', 'classification reanalysis', 'radio emitter', 'calibrated data agglomerations', 'boolean factor analysis', 'multimedia databases', 'effectiveness', 'information services', 'spacetime large data', 'public health', 'systematics')  
(student28') > ('laboratory', 'xi;fuzzy neural networks', 'medical decision support system', 'shuffling method', 'asynchronous thresholding neural units', 'security applications', 'robust inference', 'quadratic programming', 'server', 'hdds')  
(student29') > ('collective effort', 'deep learning algorithm', 'bone', 'identity-based encryption', 'filtering', 'recurrent neural nets', 'facebook data analytics', 'data space', 'fuzzy set theory', 'case based reasoning(cbr)', 'cctv cameras', 'multiple parallel deep learning frameworks', 'alzheimers disease classification')  
(student30') > ('xi;cognitive systems', 'testing', 'image representation', 'programmable bits weights', 'social network', 'pattern discovery', 'approximate equivalence neural network', 'trajectory', 'ethic', 'apache spark mllib', 'multilayer neural network')  
(student31') > ('resource management', 'performance evaluation', 'genetic programming', 'computational modeling', 'business', 'big data industry', 'xi;neural networks', 'effective cooperative behaviors', 'community', 'calibrated data agglomerations', 'thumb', 'cased based reasoning', 'machine learning method', 'nearest neighbor searches', 'gpu', 'm.2', 'network weights')  
(student32') > ('fuzzy logic', 'cognitive computers', 'selection construction', 'modified error backpropagation technique', 'xi;blood pressure', 'programmable bits weights', 'xi;dictionaries', 'information retrieval', 'limit-cycles', 'crossbreed genetic algorithm', 'hebbian learning', 'machine understandable forms', 'darwin machines', 'embryo', 'dqn model')  
(student33') > ('information retrieval systems', 'deep thinking robots', 'sensitivity', 'simulated annealing', 'information analysis', 'internet-of-things', 'unfiltered web page', 'knowledge learning', 'cellular neural networks', 'xi;cloud computing', 'hierarchical feature representation')  
(student34') > ('power measurement', 'maximum probability', 'video analysis', 'engineering', 'user-specified constraints', 'xi;probability density function', 'big data quality problem', 'sequential updating', 'optical fiber theory', 'clustering')  
(student35') > ('domain model', 'genetic algorithm', 'up/down counter', 'social set analysis', 'learning techniques', 'sales management', 'multi agent systems', 'text categorization', 'data distribution', 'belief networks', 'data locality manager', 'speech recognition', 'image annotation', 'public health', 'dynamic loci', 'premier capabilities')  
(student36') > ('dispatching', 'security challenges', 'counter-terrorism research', 'cognitive robots', 'program processors', 'statistic', 'information theoretic divergence measures', 'deep sarsa learning', 'unified modeling language', 'organization performance', 'systematics', 'doubles pong game')  
(student37') > ('my armband', 'stability', 'parallel architectures', 'ocean', 'mathematical model', 'analog computation', 'machine learning theory', 'security challenges', 'human-computer interaction (hci)', 'modelling', 'intelligent agent', 'ports (computers)', 'social networks', 'digital neurochip', 'asynchronous thresholding neural units', 'diverse data sources', 'electronic learning')  
(student38') > ('iterative methods', 'recommender system problem', 'knowledge based systems', 'search methods', 'simulated annealing', 'time series data', 'frequency', 'multidimensional unitron', 'hardware topological constraints', 'xi;sparks', 'hard disks', 'vlsi implementation', 'hidden units', 'fuzzy neural networks', 'classification method', 'formal concept', 'xi;backpropagation', 'dedicated visi', 'generalisation capability', 'distributed storage', 'probability distribution', 'big data i/o performance', 'network weights')  
(student39') > ('gas turbines', 'surveillance platform', 'power generation products engineering division', 'robustness', 'hypertension', 'behavior generation', 'closed circuit television', 'open science', 'solid', 'architecture', 'standards organizations', 'hard disks', 'signal detection', 'artificial intelligence', 'dynamic loci', 'time series analysis', 'hardware resource utilization')  
(student40') > ('hardware topologies', 'open-loop structures', 'chebychev approximation', 'energy states', 'deep representation learning', 'optical information processing', 'filter neural network', 'cost', 'education', 'inference algorithms', 'boolean functions', 'rbm', 'natural languages', 'file systems')  
(student41') > ('triangular maps', 'research institutions', 'data exchange scheme', 'hierarchical machine learning', 'security challenges', 'synchronization', 'crowd sourcing geographic data today', 'risk management', 'distributed mining', 'assembly', 'data integration and analysis system program', 'xi;backpropagation', 'multiple stage interconnection networks', 'autonomous source', 'speaker-independent spoken number recognition')  
(student42') > ('fault samples', 'maximum probability', 'svm', 'numerical simulation', 'prospective systems', 'video frames', 'commercial hotspots mining', 'data management', 'platform independent machine learning library', 'contract', 'xi;computer architecture', 'constraint', 'approximate equivalence neural network', 'brain models')  
(student43') > ('sequential access', 'iso standards', 'counter-terrorism', 'recognition rate', 'closed circuit television', 'handwritten number recognition', 'algorithm design and analysis', 'data checklist', 'joint learning agents', 'hybrid era', 'fuzzy neural networks', 'pattern recognition', 'geospatial data point extraction', 'country economy')  
(student44') > ('focused mining', 'mathematics', 'dynamic', 'dictionary', 'high dimensional state-space', 'wavelength routing', 'intelligent agent', 'classification techniques', 'routing', 'iugonet', 'deep convolutional belief network', 'multidimensional climate observations')  
(student45') > ('mean root mean squared error', 'xi;intelligent networks', 'switched-capacitor implementations', 'xi;feature extraction', 'xi;computer architecture', 'artificial neural networ (ann)', 'digitally-controlled synapse circuit', 'heterogeneous data sources', 'environmental characteristics', 'premier capabilities')  
(student46') > ('discrete hopfield neural network', 'neural controller', 'quality assessment', 'first-person perspective game', 'xi;decision trees', 'fuzzy reference points', 'information retrieval', 'inter-cloud', 'personnel', 'neuroscience', 'liver diseases', 'arithmetic', 'distributed training data')  
(student47') > ('hcl device', 'fine-grain parallel computing', 'engineering', '2d-compatible multilayer neural network', 'hippocampus', 'random variables', 'hopfield neural nets', 'genetic method', 'shuffling method', 'stabilization', 'computer resource', 'clustering', 'research community', 'hebbian learning', 'factor concepts', 'dwt', 'time series analysis')  
(student48') > ('loss measurement', 'hard disk drive', 'iot sensor device', 'stability analysis', 'security', 'company ip', 'relaxation techniques', 'modified backpropagation learning', 'routing', 'video signal processing', 'information systems', 'hebbian theory', 'semi-supervised learning', 'fpga', 'shallow learning', 'hpc and big data convergence', 'anonymous platform')  
(student49') > ('neural nets', 'iot sensor device', 'data stores', 'sampling methods', 'cognitive machine learning', 'terrorism', 'qos', 'switched-capacitor implementations', 'complexity theory', 'signal feedforward', 'workflow', 'game ai domain', 'manufacturing system', 'knowledge science', 'distributed databases', 'dcnn', 'training', 'generalisation capability', 'country economy')  
(student50') > ('regression method', 'xi;chaos', 'svm', 'classification accuracy', 'large scale integration', 'm-th order ordinary differential equations', 'xi;mathematical model', 'national electric code', 'xi;optimization methods', 'data mining', 'social networks', 'real time', 'computer resource', 'decision making', 'natural language processing', 'pressure measurement', 'hadoop yarn', 'istanbul', 'vegetation')  
(student51') > ('worst-case identification', 'datamining', 'cluster utilization', 'logic programming languages', 'atmospheric measurements', 'genetic algorithms', 'manufacturing systems', 'dynamic control algorithm', 'inter-university upper atmosphere global observation network', 'big data leak threat', 'japan', 'heterogeneous source', 'imbalanced distributions', 'complex datasets')  
(student52') > ('best practices', 'regression method', 'subsymbolic data mining', 'data storage', 'relaxation techniques', 'surgery', 'online analytical process', 'big data search and mining', 'single machine scheduling', 'support vector machine classification', 'social set visualizer', 'multilayer perceptrons')  
(student53') > ('intelligent robots', 'learning techniques', 'high dimensional state-space', 'extended bidirectional associative memory neural network', 'discrete wavelet transforms', 'synchronization', 'cognitive systems', 'data source', 'data mining', 'diagnosis system', 'basal ganglia', 'missing patient data', 'logic circuits', 'domain-specific case studies', 'istanbul', 'educational institutions', 'software algorithms', 'separating hyper-plane')  
(student54') > ('domain model', 'digital architecture', 'medical information systems', 'sensitivity', 'analog computation', 'optimization', 'two-character-nouns', 'standard', 'big data models and algorithms', 'embedded systems', 'stock markets', 'machine understandable forms', 'speech recognition', 'self adjusting fuzzy modeling', 'deep reasoning', 'la study')  
(student55') > ('distributed deep learning platform', 'power measurement', 'temperature measurement', 'actuator', 'analogue storage', 'dqn', 'medical diagnosis', 'search methods', 'pose estimation', 'building', 'data checklist', 'multilayered perceptron neural network', 'ladder networks', 'hard disks', 'data locality', 'read-write memory', 'functional regression', 'drug')  
(student56') > ('mitre research team', 'actuator', 'hilbert space', 'iot sensor device', 'market research', 'education', 'computer security', 'chaos', 'maximal margin classification', 'generalisation (artificial intelligence)', 'concurrent learning agents', 'cross industry standard platform for data mining', 'multidimensional climate observations', 'progression evaluation', 'ma', 'organization', 'hdds')  
(student57') > ('data shuffling', 'machine learning classifier', 'mathematical engineering', 'knowledge representation and reasoning', 'google', 'neural network hardware', 'data geographical distribution', 'character recognition', 'deep thinking', 'transfer function', 'adaptation models', 'solid', 'information systems', 'multi-layer svm', 'factor concepts', 'returns-to-scale effects')  
(student58') > ('content-addressable storage', 'big data geospatial visibility', 'hetero-associative memory', 'deep q-networks', 'multi agent systems', 'big scientific data', 'boolean functions', 'storage management', 'distributed mining', 'adaptive systems', 'belief networks', 'unsupervised learning')  
(student59') > ('analytical models', 'discrete hopfield neural network', 'counter-terrorism', 'road accident occurrence status analysis', 'dispatching', 'inference framework', 'analogue processing circuits', 'data mining', 'hard discs', 'neurophysiology', 'training samples', 'fault detection', 'distributed databases', 'switched capacitor networks')  
(student60') > ('brain modeling', 'iterative methods', 'hippocampus', 'deep learning algorithm', 'planning', 'tellurium', 'matrix decomposition', 'memory retrieval process', 'eprom', 'text analysis', 'three layer feedforward network', 'decision making', 'computerised tomography', 'monitoring')  
(student61') > ('logistics', 'gradient based learning algorithms', 'triangular maps', 'power quality', 'xi;optical fiber networks', 'decision support systems', 'human computer interaction', 'middleware', 'identification', 'pressure measurement', 'openai gym')  
(student62') > ('observatory', 'patient diagnosis', 'deep convolutional belief network', 'cache storage', 'systematics', 'distributed training data')  
(student63') > ('signal generators', 'laboratory', 'adaptability', 'deep learning operations', 'information processing', 'deep q-netn'rok', 'big data spatial extent', 'iot applications', 'nonsmooth membership functions', 'xi;learning (artificial intelligence)', 'bison', 'hardware-friendly neural structures', 'objective function', 'nasc', 'patient diagnosis', 'analogue multipliers', 'lagrangian functions', 'numerical computation library', 'python-based deep learning library', 'arthritis', 'cache storage', 'job shop scheduling', 'cognitive foundations', 'optimal kernel function', 'computer aided instruction', 'monitoring', 'electronic learning')  
(student64') > ('resource management', 'xi;data visualization', 'discrete hopfield neural network', 'artificial intelligence function', 'statistical learning', 'big data platforms', 'business data processing', 'pr learning', 'm.2 ssd cache', 'flexible beam', 'cognitive robots', 'fpga', 'physical resources', 'multiple stage interconnection networks', 'inverse dynamics', 'depth kernel learning', 'research and development')  
(student65') > ('brain modeling', 'control signal', 'observatory', 'commercial hotspot exploration', 'iterated game executions', 'analog computation', 'distributed tensorflow', 'robot', 'vlsi implementation', 'big data search and mining', 'data validation process', 'quadratic programming', 'organization work flow', 'text classification application')  
(student66') > ('distributed deep learning platform', 'test pattern', 'post operative implanted knee function prediction', 'routing algorithm', 'discussion forum', 'xi;probability density function', 'cooperative behavior', 'research data management', 'solid', 'hilbert spaces', 'dynamic data management', 'commercial hotspots', 'sequential updating', 'main building blocks', 'production rjms middleware car', 'wavelet analysis', 'intelligent data analysis', 'country economy', 'neural network hardware implementations')  
(student67') > ('worst-case identification', 'data usability', 'feedforward', 'experience replay', 'deep dictionary learning framework', 'xi;computer architecture', 'deep neural network', 'optical networks', 'marketing data processing', 'statistic information', 'video streams', 'trajectory', 'vizdom')  
(student68') > ('functionally equivalent machine', 'up/down counter', 'dynamic security-level maximization', 'twitter', 'xi;big data', 'human-computer interaction (hci)', 'inference framework', 'courseware', 'supervised classification', 'nasc', 'emotional systems', 'social media big data analysis', 'mapreduce', 'ma', 'geospatial data processing', 'hopfield model neural network', 'inverse dynamics', 'wavelet analysis', 'gpu', 'baipas', 'earth')  
(student69') > ('supervised learning', 'sequential access', 'machine learning techniques', 'knowledge based systems', 'software', 'machine learning', 'xi;decision trees', 'haar transforms', 'extreme point', 'space technology', 'high dimensional feature space', 'probability', 'program processors', 'intelligent algorithms', 'lagrangian functions', 'application allocation', 'multilayer neural network', 'distributed storage', 'high speed optical techniques', 'hierarchical feature representation', 'hdds')  
(student70') > ('pattern matching', 'eigenvalues and eigenfunctions', 'protection', 'optimisation', 'fault tolerant computing', 'gas turbine', 'm-th order ordinary differential equations', 'cooperative behaviors', 'xi;x-ray imaging', 'fuzzy set theory', 'parallel processing', 'deep convolutional belief network', 'induction generators', 'numerical computation library', 'word construction rules', 'chemical analysis', 'htm algorithm', 'market prediction', 'm.2')  
(student71') > ('analog t-model neural network hardware', 'fpnn', 'time series', 'mutual connections', 'investment', 'pressure measurement', 'organization')  
(student72') > ('application', 'separation theorem', 'open systems', 'asynchronous blocks', 'fault tolerant computing', 'boolean functions', 'data distribution', 'docker', 'statistical learning theory', 'code', 'game', 'anonymous platform', 'computational efficiency', 'arm archive')  
(student73') > ('hierarchical deep learning models', 'rfhtmc', 'search methods', 'streaming media', 'ports (computers)', 'calibrated data agglomerations', 'security applications', 'nonlinear control systems', 'life estimation', 'petroleum')  
(student74') > ('innovative accumulator', 'data storage', 'computer simulation', 'satellite', 'hpc jobs', 'dot product matching neural network', 'solid', 'support vector machines', 'quantitative attribute', 'domain-specific knowledge', 'online data', 'middleware', 'sequential updating', 'doubles pong game', 'indexing', 'lifetime estimation')  
(student75') > ('loss measurement', 'classification incremental learning algorithm', 'data integrity', 'protection', 'dictionary', 'market research', 'satellite', 'polynomial', 'platform independent machine learning library', 'company', 'unsolicited electronic mail')  
(student76') > ('clustering mining', 'deep reinforcement learning', 'optimization', 'data sharing', 'cognitive process', 'knowledge extraction', 'remote sensing', 'believe networks', 'peer-to-peer computing', 'computational complexity', 'deep convolutional neural network', 'software prototyping', 'big data access', 'darwin machines', 'scholarly communication')  
(student77') > ('heating systems', 'mooc', 'collaborative work', 'first-person perspective game', 'open science', 'feature extraction and classification', 'patient prognosis', 'high dimensional feature space', 'electronic neuronic model', 'm.2 ssd cache', 'psychology', 'hyperparameter optimization', 'optical fiber communication', 'cnn', 'organization work flow', 'hopfield-type neural network', 'earth')  
(student78') > ('hepatitis disease diagnosis', 'software', 'control systems', 'unsupervised deep learning', 'multi agent systems', 'government', 'electronic mail', 'heating', 'generalisation (artificial intelligence)', 'boolean functions', 'cloud computing', 'hardware implementation', 'standards organizations', 'neurochips', 'optical networks', 'clean data', 'trajectory')  
(student79') > ('differential equations', 'neural network technologies', 'context modeling', 'prosthetics', 'national electric code', 'real-time systems', 'unlabeled/unsupervised data', 'natural languages', 'distributed deep larning platform', 'nonlinear control systems')  
(student80') > ('kernel', 'stability analysis', 'clustering mining', 'biomedical monitoring', 'parallel architectures', 'iterated game executions', 'business data', 'incremental supprot vector machine', 'business data processing', 'hpc jobs', 'medical computing', 'xi;support vector machines', 'flexible beam', 'network-on-a-chip', 'security of data', 'semantics algebra', 'organization')  
(student81') > ('big data discovery', 'unsupervised feature learning', 'input data preprocessing methods', 'iso standards', 'application', 'reinforcement learning', 'routing algorithm', 'flexible structures', 'resource and job management system', 'wuc', 'kernel method', 'event study', 'artificial neural networks', 'fundamental ai problems', 'long short-term memory models', 'decision making', 'online data', 'indexing')  
(student82') > ('redundancy', 'multi-agent systems', 'cluster mining', 'random forest', 'privacy protection', 'time factors', 'feature extraction and classification', 'education', 'fuzzy systems', 'terrestrial atmosphere', 'workflow', 'distributed environment', 'embedded systems', 'distributed platform', 'correlation', 'unsolicited electronic mail')  
(student83') > ('regression method', 'fuzzy logic', 'multimedia communication', 'boltzmann machines', 'clustering mining', 'simulated annealing', 'fatigue', 'effective cooperative behaviors', 'contract', 'recurrent neural networks', 'machine learning classification techniques')  
(student84') > ('regression method', 'nitre research team', 'patterin recognition', 'eigenvalues and eigenfunctions', 'ordinary least squares algorithm', 'application', 'neuron', 'xi;terrorism', 'recurrent neural networks', 'generalisation (artificial intelligence)', 'class labels', 'high-performance', 'optical networks', 'quadratic programming', 'cnn', 'aging', 'core memory', 'apache spark mlib 2')  
(student85') > ('ordinary least square algorithm', 'ontology-based automated reasoning', 'deep thinking robots', 'observatory', 'cooperative behavior', 'job production systems', 'hilbert spaces', 'geometry', 'analog computers')  
(student86') > ('first-person perspective game', 'reliability', 'education', 'shuffling method', 'human-computer interaction (hci)', 'xi;magnesium compounds', 'adaptation rule circuit', 'coal mining', 'nonlinear systems', 'programming', 'inter-cloud', 'neural net architecture')  
(student87') > ('history training dataset', 'active learning', 'knowledge representation and reasoning', 'data analysis', 'analog computation', 'inference algebra', 'adaptation rule circuit', 'feedforward neural nets', 'ordinary differential equation', 'objective function', 'history training dataset', 'active learning', 'knowledge representation and reasoning', 'data analysis', 'analog computation', 'inference algebra', 'adaptation rule circuit', 'feedforward neural nets', 'ordinary differential equation', 'objective function')  
(student88') > ('tool', 'infrastructure', 'medical information systems', 'user-specified constraints', 'classifier structure', 'boolean factor analysis', 'signal feedforward', 'standard backpropagation', 'xi;biological neural networks', 'functional regression', 'chemical analysis', 'hand gesture recognition')  
(student89') > ('unlabeled data', 'highly accurate inference', 'maximum probability', 'transputers', 'random forest', 'application', 'random variables', 'modified error backpropagation technique', 'relaxation techniques', 'xi;probability density function', 'parallel processing', 'correlation theory', 'logic programming', 'visualisation', 'pulse modulation', 'duty cycle')  
(student90') > ('discrete hopfield neural network', 'chebychev approximation', 'big social data', 'neural network', 'commercial hotspot exploration', 'storage capacitor', 'hierarchical machine learning', 'transfer function', 'application software', 'data interoperability', 'classification techniques', 'support vector machines', 'medical professionals', 'stock market forecasting', 'boosting')  
(student91') > ('deep neural network training', 'computer games', 'hazard', 'dictionary', 'finance', 'code', 'fault detection', 'semantic technologies', 'aging', 'multiplying circuits', 'wavelength division multiplexing')  
(student92') > ('test pattern', 'live data massive streaming', 'xi;data visualization', 'ordinary least squares algorithm', 'user-specified constraints', 'on-chip error backpropagation learning', 'risk management', 'dual codes', 'fuzzy control', 'pattern discovery', 'the new york times')  
(student93') > ('best practices', 'theoretical analysis', 'counter-terrorism', 'data quality', 'data collector', 'xi;capacitors', 'stabilization', 'long short-term memory models', 'clustering algorithms', 'public health', 'image classification', 'aging', 'layered topology', 'fuzzy number spaces', 'scholarly communication', 'hardware resource utilization')  
(student94') > ('data privacy', 'accident risk determination', 'svm', 'brain', 'vocabulary', 'lyapunov optimization', 'data management', 'kernel method', 'data checklist', 'energy consumption', 'time series', 'medical image processing', 'spatiotemporal data', 'marketing data processing', 'functional regression', 'supervised learning based methods', 'support vector machine classification', 'dataset query', 'clustering')  
(student95') > ('digital architecture', 'privacy protection', 'convex hull', 'subject-based data archives', 'data science process', 'optimization', 'coordinated behaviors', 'support vector machine', 'data maintenance', 'big-data analyses', 'hyperparameters', 'flexible visualization-based user interface', 'neural net architecture', 'alzheimers disease classification', 'openai gym', 'image sampling', 'continual neural networks', 'dataset query', 'hdds')  
(student96') > ('xi;discrete wavelet transforms', 'video analysis', 'neuron', 'xi;neural networks', 'big data validation', 'kernel-based deep learning', 'cctv cameras', 'signal detection', 'extraterrestrial measurements', 'virtual neural links')  
(student97') > ('unknown nonlinear plant', 'energy states', 'classification incremental learning algorithm', 'high performance computing', 'mean square error methods', 'bayesian algorithm', 'analog computation', 'major brain functions', 'data sharing', 'xi;facebook', 'educational institutions', 'dataset query', 'remote sensing data classification')  
(student98') > ('testing', 'sequential access', 'xi;handheld computers', 'history training dataset', 'sales management', 'action control', 'machine vision quality inspection', 'weighting function', 'semantics', 'function approximation capability', 'analog storage', 'standard backpropagation', 'multiple stage interconnection networks', 'hopfield-type neural network', 'organization', 'communication standards')  
(student99') > ('modified error backpropagation technique', 'research institutions', 'design optimization', 'computer centres', 'simulated annealing', 'backpropagation neural network', 'semantics', 'programmable nonlinear capacitor', 'automation', 'transfer function', 'machine learning accuracy', 'fuzzy reference points', 'predictive models', 'fuzzy numbers', 'convolution structure', 'neuroscience', 'job shop scheduling', 'matched filters')  
(student1', 'student9') > ('conceptual design')  
(student1', 'student32') > ('cognitive computers')  
(student1', 'student63') > ('iot applications')  
(student1', 'student68') > ('functionally equivalent machine', 'supervised classification')  
(student1', 'student81') > ('artificial neural networks', 'online data')  
(student1', 'student89') > ('pulse modulation')  
(student1', 'student91') > ('finance')  
(student1', 'student96') > ('kernel-based deep learning')  
(student2', 'student6') > ('generating control bits')  
(student2', 'student14') > ('fuzzy expert network learning architecture')  
(student2', 'student16') > ('video streaming')  
(student2', 'student37') > ('machine learning theory')  
(student2', 'student51') > ('logic programming languages', 'manufacturing systems')  
(student2', 'student68') > ('geospatial data point processing')  
(student2', 'student87') > ('dn')  
(student3', 'student32') > ('dqn model')  
(student3', 'student68') > ('hopfield model neural network')  
(student3', 'student89') > ('logic programming')  
(student3', 'student96') > ('xi;discrete wavelet transforms', 'video analysis')  
(student4', 'student29') > ('collective effort')  
(student4', 'student70') > ('xi;x-ray imaging')  
(student4', 'student84') > ('high-performance')  
(student5', 'student6') > ('hyper planes')  
(student5', 'student11') > ('protocol')  
(student5', 'student19') > ('chinese new word extraction')  
(student5', 'student44') > ('wavelength routing')  
(student5', 'student47') > ('dwt')  
(student5', 'student63') > ('bison')  
(student6', 'student19') > ('urban areas')  
(student6', 'student23') > ('production equipment')  
(student6', 'student30') > ('social network')  
(student6', 'student49') > ('terrorism', 'signal feedforward')  
(student6', 'student58') > ('adaptive systems')  
(student6', 'student78') > ('hardware implementation', 'clean data')  
(student6', 'student97') > ('xi;terrorism')  
(student7', 'student48') > ('shallow learning')  
(student7', 'student56') > ('actuator', 'education')  
(student7', 'student66') > ('neural network hardware implementations')  
(student7', 'student82') > ('redundancy', 'education', 'terrestrial atmosphere')  
(student8', 'student17') > ('reward schemes')  
(student8', 'student33') > ('knowledge learning')

File - apply\_fca  
(student8', 'student37') > ('ocean',)  
(student8', 'student41') > ('crowd sourcing geographic data today',)  
(student8', 'student53') > ('extended bidirectional associative memory neural network',)  
(student8', 'student65') > ('control signal',)  
(student8', 'student75') > ('company',)  
(student8', 'student77') > ('information management', 'learning (artificial intelligence)')  
(student8', 'student94') > ('svm', 'kernel method')  
(student8', 'student95') > ('data maintenance',)  
(student9', 'student11') > ('computer game',)  
(student9', 'student21') > ('asynchronous random neural networks',)  
(student9', 'student50') > ('l<sup>2</sup> optimization methods', 'computer resource')  
(student9', 'student55') > ('multilayered perceptron neural network',)  
(student9', 'student64') > ('depth kernel learning',)  
(student9', 'student80') > ('incremental support vector machine',)  
(student9', 'student92') > ('dual codes',)  
(student10', 'student16') > ('computer-aided diagnosis system',)  
(student10', 'student28') > ('fix;fuzzy neural networks',)  
(student10', 'student38') > ('hidden units',)  
(student10', 'student52') > ('single machine scheduling',)  
(student11', 'student29') > ('facebook data analytics',)  
(student11', 'student35') > ('text categorization',)  
(student11', 'student38') > ('recommender system problem', 'fuzzy neural networks')  
(student11', 'student43') > ('fuzzy neural networks', 'country economy')  
(student11', 'student57') > ('data shuffling',)  
(student11', 'student62') > ('observatory', 'cache storage')  
(student11', 'student80') > ('semantics algebra',)  
(student11', 'student93') > ('layered topology',)  
(student11', 'student100') > ('programmable nonlinear capacitor',)  
(student12', 'student13') > ('analogue computer circuits',)  
(student12', 'student21') > ('analog circuits',)  
(student12', 'student39') > ('power generation products engineering division',)  
(student12', 'student43') > ('pattern recognition',)  
(student12', 'student49') > ('qos',)  
(student12', 'student53') > ('basal ganglia',)  
(student12', 'student56') > ('cross industry standard platform for data mining',)  
(student12', 'student83') > ('boltzmann machines',)  
(student12', 'student99') > ('fix;handheld computers',)  
(student13', 'student48') > ('hpc and big data convergence',)  
(student13', 'student69') > ('intelligent algorithms',)  
(student13', 'student78') > ('control systems',)  
(student13', 'student89') > ('correlation theory',)  
(student14', 'student21') > ('error correction',)  
(student14', 'student27') > ('facebook data',)  
(student15', 'student27') > ('hybrid network',)  
(student15', 'student55') > ('building',)  
(student15', 'student82') > ('fuzzy systems',)  
(student15', 'student87') > ('regression analysis',)  
(student16', 'student19') > ('training set information',)  
(student16', 'student23') > ('bioinformatics',)  
(student16', 'student41') > ('assembly',)  
(student16', 'student52') > ('online analytical process',)  
(student16', 'student56') > ('progression evaluation',)  
(student16', 'student57') > ('data geographical distribution',)  
(student16', 'student58') > ('hetero-associative memory', 'deep q-networks')  
(student16', 'student87') > ('active learning',)  
(student17', 'student95') > ('data science process',)  
(student17', 'student38') > ('distributed storage', 'big data i/o performance')  
(student17', 'student44') > ('focused mining',)  
(student17', 'student49') > ('data stores',)  
(student18', 'student19') > ('road accident',)  
(student18', 'student24') > ('knee',)  
(student18', 'student53') > ('missing patient data',)  
(student18', 'student55') > ('read-write memory',)  
(student18', 'student69') > ('high speed optical techniques',)  
(student18', 'student73') > ('hierarchical deep learning models',)  
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